

TECHNICAL APPENDICES  
**PALOMAR COMMUNITY COLLEGE DISTRICT**  
**SOUTH EDUCATION CENTER**  
San Diego, California  
March 24, 2016

LLG Ref. 3-15-2464

## APPENDICES

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### APPENDIX

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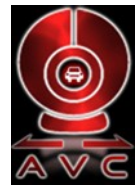
- A. Intersection and Segment Manual Count Sheets, Caltrans Data
- B. City of San Diego Roadway Classification Table
- C. Existing Intersection Analysis Worksheets
- D. SANDAG Select Zone Assignment and Year 2035 Traffic Volumes and Land Use Data
- E. Opening Day Without Project Intersection Analysis Worksheets
- F. Opening Day With Project Intersection Analysis Worksheets
- G. Rancho Bernardo and Black Mountain Ranch Public Facilities Financing Plan Excerpts
- H. Year 2035 Without Project Intersection Analysis Worksheets
- I. Year 2035 With Project Intersection Analysis Worksheets
- J. Entitled Office Development Traffic Volumes and Intersection Analysis Worksheets
- K. Post-Mitigation Intersection Analysis Worksheets

## **APPENDIX A**

### **INTERSECTION AND SEGMENT MANUAL COUNT SHEETS, CALTRANS DATA**

# Turn Count Summary

Accurate Video Counts Inc  
info@accuratevideocounts.com  
(619) 987-5136



**Location:** Rancho Bernardo Road @ Camino San Bernardo

**Date of Count:** Tuesday, May 19, 2015

**Analysts:** LV/CD

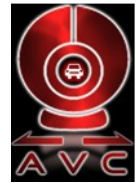
**Weather:** Sunny

**AVC Proj No:** 15-0351



# Vehicular Count

Accurate Video Counts Inc  
info@accuratevideocounts.com  
(619) 987-5136



**Location:** Rancho Bernardo Road @ Camino San Bernardo

| AM Period (7:00 AM - 9:00 AM) |            |      |      |           |       |      |            |      |      |           |       |      |       |
|-------------------------------|------------|------|------|-----------|-------|------|------------|------|------|-----------|-------|------|-------|
|                               | Southbound |      |      | Westbound |       |      | Northbound |      |      | Eastbound |       |      | TOTAL |
|                               | Right      | Thru | Left | Right     | Thru  | Left | Right      | Thru | Left | Right     | Thru  | Left |       |
| 7:00 AM                       | 0          | 0    | 0    | 0         | 112   | 106  | 35         | 0    | 10   | 31        | 162   | 0    | 456   |
| 7:15 AM                       | 0          | 0    | 0    | 1         | 153   | 87   | 36         | 1    | 2    | 28        | 154   | 0    | 462   |
| 7:30 AM                       | 0          | 0    | 1    | 0         | 155   | 105  | 56         | 0    | 6    | 48        | 180   | 0    | 551   |
| 7:45 AM                       | 0          | 0    | 0    | 0         | 262   | 81   | 33         | 0    | 7    | 38        | 211   | 0    | 632   |
| 8:00 AM                       | 0          | 0    | 1    | 0         | 204   | 105  | 35         | 0    | 11   | 30        | 254   | 0    | 640   |
| 8:15 AM                       | 0          | 0    | 1    | 0         | 119   | 96   | 58         | 0    | 7    | 49        | 191   | 0    | 521   |
| 8:30 AM                       | 0          | 0    | 2    | 1         | 107   | 118  | 47         | 0    | 12   | 54        | 214   | 0    | 555   |
| 8:45 AM                       | 0          | 0    | 1    | 1         | 154   | 111  | 53         | 0    | 10   | 57        | 176   | 0    | 563   |
| Total                         | 0          | 0    | 6    | 3         | 1,266 | 809  | 353        | 1    | 65   | 335       | 1,542 | 0    | 4,380 |

AM Intersection Peak Hour : **7:45 AM - 8:45 AM**

Intersection PHF : **0.92**

|              | Southbound |       |      | Westbound |      |      | Northbound |       |      | Eastbound |      |       | TOTAL |
|--------------|------------|-------|------|-----------|------|------|------------|-------|------|-----------|------|-------|-------|
|              | Right      | Thru  | Left | Right     | Thru | Left | Right      | Thru  | Left | Right     | Thru | Left  |       |
| Volume       | 0          | 0     | 4    | 1         | 692  | 400  | 173        | 0     | 37   | 171       | 870  | 0     | 2,348 |
| PHF          | #####      | ##### | 0.50 | 0.25      | 0.66 | 0.85 | 0.75       | ##### | 0.77 | 0.79      | 0.86 | ##### | 0.92  |
| Movement PHF |            | 0.50  |      |           | 0.80 |      |            | 0.81  |      |           | 0.92 |       | 0.92  |

| PM Period (4:00 PM - 6:00 PM) |            |      |      |           |       |      |            |      |      |           |       |      |       |
|-------------------------------|------------|------|------|-----------|-------|------|------------|------|------|-----------|-------|------|-------|
|                               | Southbound |      |      | Westbound |       |      | Northbound |      |      | Eastbound |       |      | TOTAL |
|                               | Right      | Thru | Left | Right     | Thru  | Left | Right      | Thru | Left | Right     | Thru  | Left |       |
| 4:00 PM                       | 0          | 0    | 2    | 0         | 174   | 42   | 101        | 0    | 34   | 33        | 170   | 0    | 556   |
| 4:15 PM                       | 0          | 0    | 2    | 0         | 189   | 48   | 109        | 0    | 39   | 36        | 150   | 0    | 573   |
| 4:30 PM                       | 0          | 0    | 1    | 0         | 133   | 99   | 50         | 0    | 12   | 32        | 229   | 0    | 556   |
| 4:45 PM                       | 0          | 0    | 1    | 0         | 145   | 97   | 56         | 0    | 6    | 47        | 182   | 0    | 534   |
| 5:00 PM                       | 0          | 0    | 1    | 0         | 151   | 104  | 38         | 0    | 11   | 42        | 290   | 0    | 637   |
| 5:15 PM                       | 0          | 0    | 1    | 0         | 202   | 92   | 82         | 0    | 26   | 56        | 208   | 0    | 667   |
| 5:30 PM                       | 0          | 0    | 1    | 0         | 139   | 98   | 63         | 0    | 15   | 64        | 248   | 0    | 628   |
| 5:45 PM                       | 0          | 0    | 0    | 0         | 209   | 43   | 127        | 0    | 57   | 46        | 153   | 1    | 636   |
| Total                         | 0          | 0    | 9    | 0         | 1,342 | 623  | 626        | 0    | 200  | 356       | 1,630 | 1    | 4,787 |

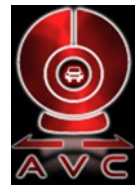
PM Intersection Peak Hour : **5:00 PM - 6:00 PM**

Intersection PHF : **0.96**

|              | Southbound |       |      | Westbound |       |      | Northbound |       |       | Eastbound |       |      | TOTAL |
|--------------|------------|-------|------|-----------|-------|------|------------|-------|-------|-----------|-------|------|-------|
|              | Right      | Thru  | Left | Right     | Thru  | Left | Right      | Thru  | Left  | Right     | Thru  | Left |       |
| Volume       | 0          | 0     | 3    | 0         | 701   | 337  | 310        | 0     | 109   | 208       | 899   | 1    | 2568  |
| PHF          | #####      | ##### | 0.75 | #####     | 0.839 | 0.81 | 0.61       | ##### | 0.478 | 0.813     | 0.775 | 0.25 | 0.96  |
| Movement PHF |            | 0.75  |      |           | 0.88  |      |            | 0.57  |       |           | 0.83  |      | 0.96  |

# Turn Count Summary

Accurate Video Counts Inc  
info@accuratevideocounts.com  
(619) 987-5136



**Location:** Rancho Bernardo Road @ Via Del Campo

**Date of Count:** Tuesday, May 19, 2015

**Analysts:** LV/CD

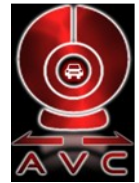
**Weather:** Sunny

**AVC Proj No:** 15-0351



# Vehicular Count

Accurate Video Counts Inc  
info@accuratevideocounts.com  
(619) 987-5136



**Location:** Rancho Bernardo Road @ Via Del Campo

| AM Period (7:00 AM - 9:00 AM) |            |      |      |           |       |       |            |      |      |           |       |      |       |
|-------------------------------|------------|------|------|-----------|-------|-------|------------|------|------|-----------|-------|------|-------|
|                               | Southbound |      |      | Westbound |       |       | Northbound |      |      | Eastbound |       |      | TOTAL |
|                               | Right      | Thru | Left | Right     | Thru  | Left  | Right      | Thru | Left | Right     | Thru  | Left |       |
| 7:00 AM                       | 0          | 1    | 2    | 0         | 236   | 114   | 4          | 1    | 9    | 43        | 157   | 0    | 567   |
| 7:15 AM                       | 0          | 0    | 0    | 0         | 255   | 151   | 2          | 0    | 11   | 94        | 226   | 2    | 741   |
| 7:30 AM                       | 0          | 0    | 0    | 0         | 275   | 145   | 3          | 0    | 10   | 46        | 194   | 1    | 674   |
| 7:45 AM                       | 0          | 0    | 1    | 0         | 409   | 148   | 3          | 0    | 15   | 70        | 207   | 0    | 853   |
| 8:00 AM                       | 0          | 0    | 0    | 0         | 269   | 152   | 9          | 0    | 23   | 92        | 231   | 1    | 777   |
| 8:15 AM                       | 0          | 0    | 0    | 0         | 231   | 101   | 17         | 0    | 17   | 72        | 192   | 0    | 630   |
| 8:30 AM                       | 0          | 0    | 0    | 0         | 225   | 112   | 6          | 0    | 16   | 64        | 199   | 1    | 623   |
| 8:45 AM                       | 0          | 0    | 2    | 1         | 256   | 125   | 1          | 0    | 17   | 75        | 174   | 0    | 651   |
| Total                         | 0          | 1    | 5    | 1         | 2,156 | 1,048 | 45         | 1    | 118  | 556       | 1,580 | 5    | 5,516 |

AM Intersection Peak Hour : **7:15 AM - 8:15 AM**

Intersection PHF : **0.89**

|              | Southbound |       |      | Westbound |       |      | Northbound |       |      | Eastbound |      |      | TOTAL |
|--------------|------------|-------|------|-----------|-------|------|------------|-------|------|-----------|------|------|-------|
|              | Right      | Thru  | Left | Right     | Thru  | Left | Right      | Thru  | Left | Right     | Thru | Left |       |
| Volume       | 0          | 0     | 1    | 0         | 1,208 | 596  | 17         | 0     | 59   | 302       | 858  | 4    | 3,045 |
| PHF          | #####      | ##### | 0.25 | #####     | 0.74  | 0.98 | 0.47       | ##### | 0.64 | 0.80      | 0.93 | 0.50 | 0.89  |
| Movement PHF |            | 0.25  |      |           | 0.81  |      |            | 0.59  |      |           | 0.90 |      | 0.89  |

| PM Period (4:00 PM - 6:00 PM) |            |      |      |           |       |      |            |      |      |           |       |      |       |
|-------------------------------|------------|------|------|-----------|-------|------|------------|------|------|-----------|-------|------|-------|
|                               | Southbound |      |      | Westbound |       |      | Northbound |      |      | Eastbound |       |      | TOTAL |
|                               | Right      | Thru | Left | Right     | Thru  | Left | Right      | Thru | Left | Right     | Thru  | Left |       |
| 4:00 PM                       | 0          | 0    | 0    | 0         | 199   | 9    | 83         | 1    | 31   | 25        | 260   | 1    | 609   |
| 4:15 PM                       | 0          | 0    | 0    | 1         | 219   | 6    | 67         | 1    | 48   | 19        | 255   | 1    | 617   |
| 4:30 PM                       | 0          | 1    | 0    | 0         | 211   | 3    | 103        | 0    | 57   | 20        | 273   | 1    | 669   |
| 4:45 PM                       | 0          | 0    | 0    | 0         | 183   | 7    | 81         | 1    | 67   | 20        | 222   | 1    | 582   |
| 5:00 PM                       | 0          | 0    | 0    | 0         | 214   | 4    | 112        | 0    | 92   | 10        | 348   | 4    | 784   |
| 5:15 PM                       | 0          | 0    | 1    | 1         | 270   | 5    | 79         | 0    | 56   | 11        | 310   | 2    | 735   |
| 5:30 PM                       | 0          | 0    | 0    | 0         | 181   | 4    | 88         | 0    | 69   | 15        | 306   | 0    | 663   |
| 5:45 PM                       | 0          | 0    | 0    | 0         | 209   | 5    | 62         | 0    | 59   | 13        | 316   | 0    | 664   |
| Total                         | 0          | 1    | 1    | 2         | 1,686 | 43   | 675        | 3    | 479  | 133       | 2,290 | 10   | 5,323 |

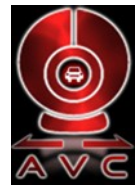
PM Intersection Peak Hour : **5:00 PM - 6:00 PM**

Intersection PHF : **0.91**

|              | Southbound |       |      | Westbound |       |      | Northbound |       |      | Eastbound |      |       | TOTAL |
|--------------|------------|-------|------|-----------|-------|------|------------|-------|------|-----------|------|-------|-------|
|              | Right      | Thru  | Left | Right     | Thru  | Left | Right      | Thru  | Left | Right     | Thru | Left  |       |
| Volume       | 0          | 0     | 1    | 1         | 874   | 18   | 341        | 0     | 276  | 49        | 1280 | 6     | 2846  |
| PHF          | #####      | ##### | 0.25 | 0.25      | 0.809 | 0.9  | 0.761      | ##### | 0.75 | 0.817     | 0.92 | 0.375 | 0.91  |
| Movement PHF |            | 0.25  |      |           | 0.81  |      |            | 0.76  |      |           | 0.92 |       | 0.91  |

# Turn Count Summary

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**Location:** Rancho Bernardo Road @ Matinal Road

**Date of Count:** Tuesday, May 19, 2015

**Analysts:** LV/CD

**Weather:** Sunny

**AVC Proj No:** 15-0351





# Vehicular Count

Accurate Video Counts Inc  
info@accuratevideocounts.com  
(619) 987-5136



**Location:** Rancho Bernardo Road @ Matinal Road

| AM Period (7:00 AM - 9:00 AM) |            |      |      |           |       |      |            |      |      |           |       |      |       |
|-------------------------------|------------|------|------|-----------|-------|------|------------|------|------|-----------|-------|------|-------|
|                               | Southbound |      |      | Westbound |       |      | Northbound |      |      | Eastbound |       |      | TOTAL |
|                               | Right      | Thru | Left | Right     | Thru  | Left | Right      | Thru | Left | Right     | Thru  | Left |       |
| 7:00 AM                       | 32         | 0    | 28   | 2         | 300   | 0    | 0          | 0    | 0    | 0         | 162   | 2    | 526   |
| 7:15 AM                       | 34         | 0    | 20   | 2         | 357   | 0    | 0          | 0    | 0    | 0         | 192   | 10   | 615   |
| 7:30 AM                       | 35         | 0    | 15   | 10        | 362   | 0    | 0          | 0    | 0    | 0         | 158   | 10   | 590   |
| 7:45 AM                       | 33         | 0    | 17   | 2         | 497   | 0    | 0          | 0    | 0    | 0         | 181   | 9    | 739   |
| 8:00 AM                       | 39         | 0    | 30   | 2         | 356   | 0    | 0          | 0    | 0    | 0         | 211   | 4    | 642   |
| 8:15 AM                       | 32         | 0    | 12   | 10        | 277   | 0    | 0          | 0    | 0    | 0         | 170   | 11   | 512   |
| 8:30 AM                       | 34         | 0    | 9    | 7         | 316   | 1    | 0          | 0    | 0    | 0         | 172   | 6    | 545   |
| 8:45 AM                       | 38         | 0    | 7    | 10        | 339   | 1    | 0          | 0    | 0    | 0         | 167   | 7    | 569   |
| Total                         | 277        | 0    | 138  | 45        | 2,804 | 2    | 0          | 0    | 0    | 0         | 1,413 | 59   | 4,738 |

AM Intersection Peak Hour : **7:15 AM - 8:15 AM**

Intersection PHF : **0.87**

|              | Southbound |       |      | Westbound |       |       | Northbound |       |       | Eastbound |      |      | TOTAL |
|--------------|------------|-------|------|-----------|-------|-------|------------|-------|-------|-----------|------|------|-------|
|              | Right      | Thru  | Left | Right     | Thru  | Left  | Right      | Thru  | Left  | Right     | Thru | Left |       |
| Volume       | 141        | 0     | 82   | 16        | 1,572 | 0     | 0          | 0     | 0     | 0         | 742  | 33   | 2,586 |
| PHF          | 0.90       | ##### | 0.68 | 0.40      | 0.79  | ##### | #####      | ##### | ##### | #####     | 0.88 | 0.83 | 0.87  |
| Movement PHF |            | 0.81  |      |           | 0.80  |       | #DIV/0!    |       |       |           | 0.90 |      | 0.87  |

| PM Period (4:00 PM - 6:00 PM) |            |      |      |           |       |      |            |      |      |           |       |      |       |
|-------------------------------|------------|------|------|-----------|-------|------|------------|------|------|-----------|-------|------|-------|
|                               | Southbound |      |      | Westbound |       |      | Northbound |      |      | Eastbound |       |      | TOTAL |
|                               | Right      | Thru | Left | Right     | Thru  | Left | Right      | Thru | Left | Right     | Thru  | Left |       |
| 4:00 PM                       | 17         | 0    | 8    | 9         | 185   | 0    | 0          | 0    | 0    | 0         | 317   | 30   | 566   |
| 4:15 PM                       | 36         | 0    | 11   | 7         | 223   | 1    | 0          | 0    | 0    | 0         | 290   | 9    | 577   |
| 4:30 PM                       | 43         | 0    | 28   | 2         | 195   | 0    | 0          | 0    | 0    | 0         | 349   | 2    | 619   |
| 4:45 PM                       | 37         | 0    | 17   | 3         | 172   | 0    | 0          | 0    | 0    | 0         | 262   | 11   | 502   |
| 5:00 PM                       | 26         | 0    | 12   | 10        | 219   | 0    | 0          | 0    | 0    | 0         | 417   | 19   | 703   |
| 5:15 PM                       | 18         | 0    | 8    | 8         | 233   | 0    | 0          | 0    | 0    | 0         | 340   | 28   | 635   |
| 5:30 PM                       | 37         | 0    | 15   | 11        | 174   | 1    | 0          | 0    | 0    | 0         | 355   | 14   | 607   |
| 5:45 PM                       | 24         | 0    | 5    | 16        | 183   | 0    | 0          | 0    | 0    | 0         | 321   | 48   | 597   |
| Total                         | 238        | 0    | 104  | 66        | 1,584 | 2    | 0          | 0    | 0    | 0         | 2,651 | 161  | 4,806 |

PM Intersection Peak Hour : **5:00 PM - 6:00 PM**

Intersection PHF : **0.90**

|              | Southbound |       |       | Westbound |       |      | Northbound |       |       | Eastbound |       |       | TOTAL |
|--------------|------------|-------|-------|-----------|-------|------|------------|-------|-------|-----------|-------|-------|-------|
|              | Right      | Thru  | Left  | Right     | Thru  | Left | Right      | Thru  | Left  | Right     | Thru  | Left  |       |
| Volume       | 105        | 0     | 40    | 45        | 809   | 1    | 0          | 0     | 0     | 0         | 1433  | 109   | 2542  |
| PHF          | 0.71       | ##### | 0.667 | 0.703     | 0.868 | 0.25 | #####      | ##### | ##### | #####     | 0.859 | 0.568 | 0.90  |
| Movement PHF |            | 0.70  |       |           | 0.89  |      | #DIV/0!    |       |       |           | 0.88  |       | 0.90  |

# Turn Count Summary

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(619) 987-5136



**Location:** Rancho Bernardo Road @ Olmeda Way

**Date of Count:** Tuesday, May 19, 2015

**Analysts:** LV/CD

**Weather:** Sunny

**AVC Proj No:** 15-0351



# Vehicular Count

Accurate Video Counts Inc  
info@accuratevideocounts.com  
(619) 987-5136



**Location:** Rancho Bernardo Road @ Olmeda Way

| AM Period (7:00 AM - 9:00 AM) |            |      |           |       |  |           |      |       |
|-------------------------------|------------|------|-----------|-------|--|-----------|------|-------|
|                               | Southbound |      | Westbound |       |  | Eastbound |      |       |
|                               | Right      | Left | Right     | Thru  |  | Thru      | Left | TOTAL |
| 7:00 AM                       | 8          | 10   | 3         | 294   |  | 187       | 2    | 504   |
| 7:15 AM                       | 1          | 5    | 3         | 358   |  | 210       | 2    | 579   |
| 7:30 AM                       | 5          | 3    | 3         | 367   |  | 172       | 1    | 551   |
| 7:45 AM                       | 5          | 4    | 1         | 494   |  | 197       | 1    | 702   |
| 8:00 AM                       | 5          | 6    | 5         | 353   |  | 238       | 3    | 610   |
| 8:15 AM                       | 1          | 5    | 6         | 286   |  | 180       | 2    | 480   |
| 8:30 AM                       | 0          | 7    | 3         | 324   |  | 180       | 1    | 515   |
| 8:45 AM                       | 3          | 5    | 2         | 347   |  | 173       | 1    | 531   |
| Total                         | 28         | 45   | 26        | 2,823 |  | 1,537     | 13   | 4,472 |

AM Intersection Peak Hour : **7:15 AM - 8:15 AM**

Intersection PHF : **0.87**

|              | Southbound |      | Westbound |       |  | Eastbound |      |       |
|--------------|------------|------|-----------|-------|--|-----------|------|-------|
|              | Right      | Left | Right     | Thru  |  | Thru      | Left | TOTAL |
| Volume       | 16         | 18   | 12        | 1,572 |  | 817       | 7    | 2,442 |
| PHF          | 0.80       | 0.75 | 0.60      | 0.80  |  | 0.86      | 0.58 | 0.87  |
| Movement PHF | 0.77       |      | 0.80      |       |  | 0.85      |      | 0.87  |

| PM Period (4:00 PM - 6:00 PM) |            |      |           |       |  |           |      |       |
|-------------------------------|------------|------|-----------|-------|--|-----------|------|-------|
|                               | Southbound |      | Westbound |       |  | Eastbound |      |       |
|                               | Right      | Left | Right     | Thru  |  | Thru      | Left | TOTAL |
| 4:00 PM                       | 0          | 0    | 4         | 194   |  | 316       | 9    | 523   |
| 4:15 PM                       | 3          | 3    | 4         | 228   |  | 289       | 12   | 539   |
| 4:30 PM                       | 3          | 2    | 9         | 194   |  | 362       | 15   | 585   |
| 4:45 PM                       | 1          | 1    | 5         | 174   |  | 264       | 15   | 460   |
| 5:00 PM                       | 1          | 1    | 9         | 228   |  | 404       | 25   | 668   |
| 5:15 PM                       | 3          | 2    | 4         | 238   |  | 329       | 19   | 595   |
| 5:30 PM                       | 0          | 2    | 8         | 186   |  | 346       | 24   | 566   |
| 5:45 PM                       | 2          | 0    | 11        | 197   |  | 321       | 5    | 536   |
| Total                         | 13         | 11   | 54        | 1,639 |  | 2,631     | 124  | 4,472 |

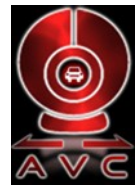
PM Intersection Peak Hour : **5:00 PM - 6:00 PM**

Intersection PHF : **0.89**

|              | Southbound |       | Westbound |       |  | Eastbound |      |       |
|--------------|------------|-------|-----------|-------|--|-----------|------|-------|
|              | Right      | Left  | Right     | Thru  |  | Thru      | Left | TOTAL |
| Volume       | 6          | 5     | 32        | 849   |  | 1400      | 73   | 2365  |
| PHF          | 0.50       | 0.625 | 0.727     | 0.892 |  | 0.866     | 0.73 | 0.89  |
| Movement PHF | 0.55       |       | 0.91      |       |  | 0.86      |      | 0.89  |

# Turn Count Summary

Accurate Video Counts Inc  
info@accuratevideocounts.com  
(619) 987-5136



**Location:** Rancho Bernardo Road @ West Bernardo Drive

**Date of Count:** Tuesday, May 19, 2015

**Analysts:** LV/CD

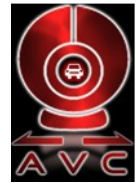
**Weather:** Sunny

**AVC Proj No:** 15-0351



# Vehicular Count

Accurate Video Counts Inc  
info@accuratevideocounts.com  
(619) 987-5136



**Location:** Rancho Bernardo Road @ West Bernardo Drive

| AM Period (7:00 AM - 9:00 AM) |            |      |       |           |       |       |            |      |      |           |       |      |       |
|-------------------------------|------------|------|-------|-----------|-------|-------|------------|------|------|-----------|-------|------|-------|
|                               | Southbound |      |       | Westbound |       |       | Northbound |      |      | Eastbound |       |      | TOTAL |
|                               | Right      | Thru | Left  | Right     | Thru  | Left  | Right      | Thru | Left | Right     | Thru  | Left |       |
| 7:00 AM                       | 29         | 72   | 182   | 30        | 294   | 147   | 47         | 3    | 12   | 17        | 141   | 6    | 980   |
| 7:15 AM                       | 26         | 77   | 171   | 61        | 338   | 135   | 21         | 13   | 31   | 12        | 145   | 9    | 1,039 |
| 7:30 AM                       | 49         | 62   | 157   | 69        | 360   | 108   | 29         | 19   | 25   | 16        | 165   | 13   | 1,072 |
| 7:45 AM                       | 26         | 78   | 170   | 72        | 394   | 146   | 21         | 13   | 31   | 12        | 125   | 9    | 1,097 |
| 8:00 AM                       | 32         | 82   | 155   | 63        | 339   | 134   | 25         | 20   | 26   | 16        | 155   | 9    | 1,056 |
| 8:15 AM                       | 57         | 87   | 161   | 67        | 364   | 111   | 32         | 33   | 23   | 16        | 164   | 11   | 1,126 |
| 8:30 AM                       | 28         | 88   | 165   | 71        | 342   | 143   | 23         | 21   | 30   | 12        | 95    | 9    | 1,027 |
| 8:45 AM                       | 30         | 65   | 104   | 42        | 338   | 151   | 31         | 9    | 17   | 11        | 212   | 20   | 1,030 |
| Total                         | 277        | 611  | 1,265 | 475       | 2,769 | 1,075 | 229        | 131  | 195  | 112       | 1,202 | 86   | 8,427 |

AM Intersection Peak Hour : **7:30 AM - 8:30 AM**

Intersection PHF : **0.97**

|              | Southbound |      |      | Westbound |       |      | Northbound |      |      | Eastbound |      |      | TOTAL |
|--------------|------------|------|------|-----------|-------|------|------------|------|------|-----------|------|------|-------|
|              | Right      | Thru | Left | Right     | Thru  | Left | Right      | Thru | Left | Right     | Thru | Left |       |
| Volume       | 164        | 309  | 643  | 271       | 1,457 | 499  | 107        | 85   | 105  | 60        | 609  | 42   | 4,351 |
| PHF          | 0.72       | 0.89 | 0.95 | 0.94      | 0.92  | 0.85 | 0.84       | 0.64 | 0.85 | 0.94      | 0.92 | 0.81 | 0.97  |
| Movement PHF |            | 0.91 |      |           | 0.91  |      |            | 0.84 |      |           | 0.92 |      | 0.97  |

| PM Period (4:00 PM - 6:00 PM) |            |      |      |           |       |      |            |      |      |           |       |      |       |
|-------------------------------|------------|------|------|-----------|-------|------|------------|------|------|-----------|-------|------|-------|
|                               | Southbound |      |      | Westbound |       |      | Northbound |      |      | Eastbound |       |      | TOTAL |
|                               | Right      | Thru | Left | Right     | Thru  | Left | Right      | Thru | Left | Right     | Thru  | Left |       |
| 4:00 PM                       | 13         | 19   | 82   | 100       | 173   | 42   | 151        | 74   | 24   | 7         | 327   | 38   | 1,050 |
| 4:15 PM                       | 15         | 19   | 73   | 88        | 170   | 57   | 115        | 84   | 24   | 7         | 318   | 33   | 1,003 |
| 4:30 PM                       | 13         | 10   | 64   | 102       | 173   | 55   | 141        | 79   | 34   | 12        | 342   | 42   | 1,067 |
| 4:45 PM                       | 18         | 29   | 89   | 104       | 193   | 56   | 125        | 91   | 22   | 5         | 283   | 38   | 1,053 |
| 5:00 PM                       | 18         | 15   | 86   | 112       | 195   | 37   | 118        | 79   | 23   | 4         | 401   | 35   | 1,123 |
| 5:15 PM                       | 11         | 19   | 69   | 97        | 211   | 43   | 162        | 75   | 25   | 7         | 347   | 45   | 1,111 |
| 5:30 PM                       | 16         | 20   | 90   | 112       | 213   | 32   | 118        | 86   | 27   | 3         | 317   | 37   | 1,071 |
| 5:45 PM                       | 20         | 10   | 80   | 156       | 210   | 20   | 129        | 78   | 36   | 7         | 309   | 37   | 1,092 |
| Total                         | 124        | 141  | 633  | 871       | 1,538 | 342  | 1,059      | 646  | 215  | 52        | 2,644 | 305  | 8,570 |

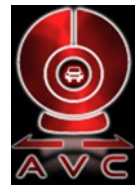
PM Intersection Peak Hour : **5:00 PM - 6:00 PM**

Intersection PHF : **0.98**

|              | Southbound |      |       | Westbound |       |       | Northbound |       |       | Eastbound |       |       | TOTAL |
|--------------|------------|------|-------|-----------|-------|-------|------------|-------|-------|-----------|-------|-------|-------|
|              | Right      | Thru | Left  | Right     | Thru  | Left  | Right      | Thru  | Left  | Right     | Thru  | Left  |       |
| Volume       | 65         | 64   | 325   | 477       | 829   | 132   | 527        | 318   | 111   | 21        | 1374  | 154   | 4397  |
| PHF          | 0.81       | 0.8  | 0.903 | 0.764     | 0.973 | 0.767 | 0.813      | 0.924 | 0.771 | 0.75      | 0.857 | 0.856 | 0.98  |
| Movement PHF |            | 0.90 |       |           | 0.93  |       |            | 0.91  |       |           | 0.88  |       | 0.98  |

# Turn Count Summary

Accurate Video Counts Inc  
info@accuratevideocounts.com  
(619) 987-5136



**Location:** Rancho Bernardo Road @ I-15 Southbound Ramps  
**Date of Count:** Tuesday, May 19, 2015  
**Analysts:** LV/CD  
**Weather:** Sunny  
**AVC Proj No:** 15-0351





# Vehicular Count

Accurate Video Counts Inc  
info@accuratevideocounts.com  
(619) 987-5136



**Location:** Rancho Bernardo Road @ I-15 Southbound Ramps

| AM Period (7:00 AM - 9:00 AM) |            |      |       |           |       |      |            |      |      |           |       |      |       |
|-------------------------------|------------|------|-------|-----------|-------|------|------------|------|------|-----------|-------|------|-------|
|                               | Southbound |      |       | Westbound |       |      | Northbound |      |      | Eastbound |       |      | TOTAL |
|                               | Right      | Thru | Left  | Right     | Thru  | Left | Right      | Thru | Left | Right     | Thru  | Left |       |
| 7:00 AM                       | 240        | 0    | 117   | 162       | 231   | 0    | 0          | 0    | 0    | 177       | 193   | 0    | 1,120 |
| 7:15 AM                       | 223        | 0    | 97    | 113       | 311   | 0    | 0          | 0    | 0    | 174       | 163   | 0    | 1,081 |
| 7:30 AM                       | 196        | 0    | 125   | 60        | 341   | 0    | 0          | 0    | 0    | 140       | 211   | 0    | 1,073 |
| 7:45 AM                       | 287        | 0    | 175   | 67        | 325   | 0    | 0          | 0    | 0    | 137       | 179   | 0    | 1,170 |
| 8:00 AM                       | 270        | 0    | 146   | 143       | 266   | 0    | 0          | 0    | 0    | 143       | 192   | 0    | 1,160 |
| 8:15 AM                       | 228        | 0    | 180   | 152       | 314   | 0    | 0          | 0    | 0    | 143       | 214   | 0    | 1,231 |
| 8:30 AM                       | 301        | 0    | 150   | 134       | 255   | 0    | 0          | 0    | 0    | 132       | 151   | 0    | 1,123 |
| 8:45 AM                       | 221        | 0    | 165   | 113       | 310   | 0    | 0          | 0    | 0    | 142       | 205   | 0    | 1,156 |
| Total                         | 1,966      | 0    | 1,155 | 944       | 2,353 | 0    | 0          | 0    | 0    | 1,188     | 1,508 | 0    | 9,114 |

AM Intersection Peak Hour : **7:45 AM - 8:45 AM**

Intersection PHF : **0.95**

|              | Southbound |       |      | Westbound |       |       | Northbound |       |       | Eastbound |      |       | TOTAL |
|--------------|------------|-------|------|-----------|-------|-------|------------|-------|-------|-----------|------|-------|-------|
|              | Right      | Thru  | Left | Right     | Thru  | Left  | Right      | Thru  | Left  | Right     | Thru | Left  |       |
| Volume       | 1,086      | 0     | 651  | 496       | 1,160 | 0     | 0          | 0     | 0     | 555       | 736  | 0     | 4,684 |
| PHF          | 0.90       | ##### | 0.90 | 0.82      | 0.89  | ##### | #####      | ##### | ##### | 0.97      | 0.86 | ##### | 0.95  |
| Movement PHF |            | 0.94  |      |           | 0.89  |       | #DIV/0!    |       |       |           | 0.90 |       | 0.95  |

| PM Period (4:00 PM - 6:00 PM) |            |      |      |           |       |      |            |      |      |           |       |      |       |
|-------------------------------|------------|------|------|-----------|-------|------|------------|------|------|-----------|-------|------|-------|
|                               | Southbound |      |      | Westbound |       |      | Northbound |      |      | Eastbound |       |      | TOTAL |
|                               | Right      | Thru | Left | Right     | Thru  | Left | Right      | Thru | Left | Right     | Thru  | Left |       |
| 4:00 PM                       | 93         | 0    | 86   | 105       | 222   | 0    | 0          | 0    | 0    | 207       | 353   | 0    | 1,066 |
| 4:15 PM                       | 94         | 0    | 110  | 174       | 221   | 0    | 0          | 0    | 0    | 206       | 300   | 0    | 1,105 |
| 4:30 PM                       | 90         | 0    | 100  | 190       | 240   | 0    | 0          | 0    | 0    | 191       | 356   | 0    | 1,167 |
| 4:45 PM                       | 103        | 0    | 109  | 120       | 250   | 0    | 0          | 0    | 0    | 171       | 326   | 0    | 1,079 |
| 5:00 PM                       | 109        | 0    | 82   | 163       | 235   | 0    | 0          | 0    | 0    | 228       | 377   | 0    | 1,194 |
| 5:15 PM                       | 71         | 0    | 118  | 86        | 280   | 0    | 0          | 0    | 0    | 185       | 393   | 0    | 1,133 |
| 5:30 PM                       | 91         | 0    | 86   | 150       | 266   | 0    | 0          | 0    | 0    | 183       | 342   | 0    | 1,118 |
| 5:45 PM                       | 95         | 0    | 94   | 82        | 291   | 0    | 0          | 0    | 0    | 169       | 349   | 0    | 1,080 |
| Total                         | 746        | 0    | 785  | 1,070     | 2,005 | 0    | 0          | 0    | 0    | 1,540     | 2,796 | 0    | 8,942 |

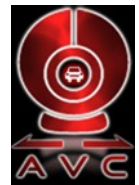
PM Intersection Peak Hour : **4:30 PM - 5:30 PM**

Intersection PHF : **0.96**

|              | Southbound |       |       | Westbound |       |       | Northbound |       |       | Eastbound |       |       | TOTAL |
|--------------|------------|-------|-------|-----------|-------|-------|------------|-------|-------|-----------|-------|-------|-------|
|              | Right      | Thru  | Left  | Right     | Thru  | Left  | Right      | Thru  | Left  | Right     | Thru  | Left  |       |
| Volume       | 373        | 0     | 409   | 559       | 1005  | 0     | 0          | 0     | 0     | 775       | 1452  | 0     | 4573  |
| PHF          | 0.86       | ##### | 0.867 | 0.736     | 0.897 | ##### | #####      | ##### | ##### | 0.85      | 0.924 | ##### | 0.96  |
| Movement PHF |            | 0.92  |       |           | 0.91  |       | #DIV/0!    |       |       |           | 0.92  |       | 0.96  |

# Turn Count Summary

Accurate Video Counts Inc  
info@accuratevideocounts.com  
(619) 987-5136



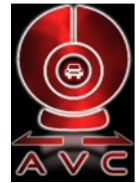
**Location:** Rancho Bernardo Road @ I-15 Northbound Ramps  
**Date of Count:** Tuesday, May 19, 2015  
**Analysts:** LV/CD  
**Weather:** Sunny  
**AVC Proj No:** 15-0351





# Vehicular Count

Accurate Video Counts Inc  
info@accuratevideocounts.com  
(619) 987-5136



**Location:** Rancho Bernardo Road @ I-15 Northbound Ramps

| AM Period (7:00 AM - 9:00 AM) |            |      |      |           |       |      |            |      |       |           |       |      |       |
|-------------------------------|------------|------|------|-----------|-------|------|------------|------|-------|-----------|-------|------|-------|
|                               | Southbound |      |      | Westbound |       |      | Northbound |      |       | Eastbound |       |      | TOTAL |
|                               | Right      | Thru | Left | Right     | Thru  | Left | Right      | Thru | Left  | Right     | Thru  | Left |       |
| 7:00 AM                       | 0          | 0    | 0    | 57        | 268   | 0    | 89         | 0    | 125   | 146       | 164   | 0    | 849   |
| 7:15 AM                       | 0          | 0    | 0    | 56        | 265   | 0    | 83         | 0    | 159   | 100       | 160   | 0    | 823   |
| 7:30 AM                       | 0          | 0    | 0    | 74        | 240   | 0    | 117        | 0    | 161   | 133       | 203   | 0    | 928   |
| 7:45 AM                       | 0          | 0    | 0    | 73        | 267   | 0    | 90         | 0    | 125   | 173       | 181   | 0    | 909   |
| 8:00 AM                       | 0          | 0    | 0    | 63        | 296   | 0    | 92         | 0    | 113   | 141       | 197   | 0    | 902   |
| 8:15 AM                       | 0          | 0    | 0    | 61        | 272   | 0    | 97         | 0    | 194   | 215       | 179   | 0    | 1,018 |
| 8:30 AM                       | 0          | 0    | 0    | 96        | 237   | 0    | 116        | 0    | 152   | 83        | 218   | 0    | 902   |
| 8:45 AM                       | 0          | 0    | 0    | 65        | 266   | 0    | 128        | 0    | 157   | 140       | 230   | 0    | 986   |
| Total                         | 0          | 0    | 0    | 545       | 2,111 | 0    | 812        | 0    | 1,186 | 1,131     | 1,532 | 0    | 7,317 |

AM Intersection Peak Hour : **8:00 AM - 9:00 AM**

Intersection PHF : **0.94**

|              | Southbound |       |       | Westbound |       |       | Northbound |       |      | Eastbound |      |       | TOTAL |
|--------------|------------|-------|-------|-----------|-------|-------|------------|-------|------|-----------|------|-------|-------|
|              | Right      | Thru  | Left  | Right     | Thru  | Left  | Right      | Thru  | Left | Right     | Thru | Left  |       |
| Volume       | 0          | 0     | 0     | 285       | 1,071 | 0     | 433        | 0     | 616  | 579       | 824  | 0     | 3,808 |
| PHF          | #####      | ##### | ##### | 0.74      | 0.90  | ##### | 0.85       | ##### | 0.79 | 0.67      | 0.90 | ##### | 0.94  |
| Movement PHF | #DIV/0!    |       |       | 0.94      |       |       | 0.90       |       |      | 0.89      |      |       | 0.94  |

| PM Period (4:00 PM - 6:00 PM) |            |      |      |           |       |      |            |      |       |           |       |      |       |
|-------------------------------|------------|------|------|-----------|-------|------|------------|------|-------|-----------|-------|------|-------|
|                               | Southbound |      |      | Westbound |       |      | Northbound |      |       | Eastbound |       |      | TOTAL |
|                               | Right      | Thru | Left | Right     | Thru  | Left | Right      | Thru | Left  | Right     | Thru  | Left |       |
| 4:00 PM                       | 0          | 0    | 0    | 130       | 201   | 0    | 140        | 0    | 126   | 219       | 220   | 0    | 1,036 |
| 4:15 PM                       | 0          | 0    | 0    | 123       | 254   | 0    | 105        | 0    | 141   | 206       | 204   | 0    | 1,033 |
| 4:30 PM                       | 0          | 0    | 0    | 113       | 242   | 0    | 99         | 0    | 188   | 284       | 172   | 0    | 1,098 |
| 4:45 PM                       | 0          | 0    | 0    | 125       | 230   | 0    | 119        | 0    | 140   | 217       | 218   | 0    | 1,049 |
| 5:00 PM                       | 0          | 0    | 0    | 127       | 269   | 0    | 100        | 0    | 129   | 233       | 226   | 0    | 1,084 |
| 5:15 PM                       | 0          | 0    | 0    | 122       | 216   | 0    | 114        | 0    | 150   | 277       | 234   | 0    | 1,113 |
| 5:30 PM                       | 0          | 0    | 0    | 116       | 264   | 0    | 123        | 0    | 152   | 224       | 204   | 0    | 1,083 |
| 5:45 PM                       | 0          | 0    | 0    | 87        | 212   | 0    | 154        | 0    | 161   | 225       | 218   | 0    | 1,057 |
| Total                         | 0          | 0    | 0    | 943       | 1,888 | 0    | 954        | 0    | 1,187 | 1,885     | 1,696 | 0    | 8,553 |

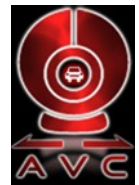
PM Intersection Peak Hour : **4:30 PM - 5:30 PM**

Intersection PHF : **0.98**

|              | Southbound |       |       | Westbound |       |       | Northbound |       |       | Eastbound |       |       | TOTAL |
|--------------|------------|-------|-------|-----------|-------|-------|------------|-------|-------|-----------|-------|-------|-------|
|              | Right      | Thru  | Left  | Right     | Thru  | Left  | Right      | Thru  | Left  | Right     | Thru  | Left  |       |
| Volume       | 0          | 0     | 0     | 487       | 957   | 0     | 432        | 0     | 607   | 1011      | 850   | 0     | 4344  |
| PHF          | #####      | ##### | ##### | 0.959     | 0.889 | ##### | 0.908      | ##### | 0.807 | 0.89      | 0.908 | ##### | 0.98  |
| Movement PHF | #DIV/0!    |       |       | 0.91      |       |       | 0.91       |       |       | 0.91      |       |       | 0.98  |

# Turn Count Summary

Accurate Video Counts Inc  
info@accuratevideocounts.com  
(619) 987-5136



**Location:** Rancho Bernardo Road @ Bernardo Center Drive

**Date of Count:** Tuesday, May 19, 2015

**Analysts:** LV/CD

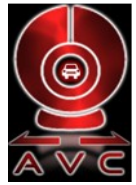
**Weather:** Sunny

**AVC Proj No:** 15-0351



# Vehicular Count

Accurate Video Counts Inc  
info@accuratevideocounts.com  
(619) 987-5136



**Location:** Rancho Bernardo Road @ Bernardo Center Drive

| AM Period (7:00 AM - 9:00 AM) |            |      |      |           |       |      |            |      |      |           |       |      |       |
|-------------------------------|------------|------|------|-----------|-------|------|------------|------|------|-----------|-------|------|-------|
|                               | Southbound |      |      | Westbound |       |      | Northbound |      |      | Eastbound |       |      | TOTAL |
|                               | Right      | Thru | Left | Right     | Thru  | Left | Right      | Thru | Left | Right     | Thru  | Left |       |
| 7:00 AM                       | 29         | 103  | 26   | 14        | 181   | 24   | 16         | 26   | 30   | 75        | 130   | 29   | 683   |
| 7:15 AM                       | 25         | 73   | 25   | 18        | 233   | 30   | 14         | 45   | 60   | 63        | 121   | 34   | 741   |
| 7:30 AM                       | 28         | 75   | 27   | 21        | 212   | 30   | 17         | 55   | 57   | 66        | 181   | 49   | 818   |
| 7:45 AM                       | 33         | 95   | 26   | 30        | 222   | 51   | 24         | 40   | 66   | 80        | 142   | 44   | 853   |
| 8:00 AM                       | 28         | 90   | 40   | 2         | 181   | 29   | 21         | 37   | 51   | 85        | 128   | 66   | 758   |
| 8:15 AM                       | 23         | 54   | 37   | 20        | 185   | 43   | 30         | 72   | 85   | 64        | 137   | 76   | 826   |
| 8:30 AM                       | 28         | 41   | 58   | 31        | 236   | 35   | 23         | 48   | 56   | 75        | 146   | 89   | 866   |
| 8:45 AM                       | 29         | 62   | 50   | 32        | 202   | 56   | 35         | 31   | 64   | 75        | 171   | 88   | 895   |
| Total                         | 223        | 593  | 289  | 168       | 1,652 | 298  | 180        | 354  | 469  | 583       | 1,156 | 475  | 6,440 |

AM Intersection Peak Hour : **8:00 AM - 9:00 AM**

Intersection PHF : **0.93**

|              | Southbound |      |      | Westbound |      |      | Northbound |      |      | Eastbound |      |      | TOTAL |
|--------------|------------|------|------|-----------|------|------|------------|------|------|-----------|------|------|-------|
|              | Right      | Thru | Left | Right     | Thru | Left | Right      | Thru | Left | Right     | Thru | Left |       |
| Volume       | 108        | 247  | 185  | 85        | 804  | 163  | 109        | 188  | 256  | 299       | 582  | 319  | 3,345 |
| PHF          | 0.93       | 0.69 | 0.80 | 0.66      | 0.85 | 0.73 | 0.78       | 0.65 | 0.75 | 0.88      | 0.85 | 0.90 | 0.93  |
| Movement PHF |            | 0.85 |      |           | 0.87 |      |            | 0.74 |      |           | 0.90 |      | 0.93  |

| PM Period (4:00 PM - 6:00 PM) |            |      |      |           |       |      |            |      |      |           |       |      |       |
|-------------------------------|------------|------|------|-----------|-------|------|------------|------|------|-----------|-------|------|-------|
|                               | Southbound |      |      | Westbound |       |      | Northbound |      |      | Eastbound |       |      | TOTAL |
|                               | Right      | Thru | Left | Right     | Thru  | Left | Right      | Thru | Left | Right     | Thru  | Left |       |
| 4:00 PM                       | 18         | 79   | 44   | 28        | 164   | 21   | 55         | 111  | 106  | 79        | 174   | 66   | 945   |
| 4:15 PM                       | 17         | 72   | 40   | 36        | 151   | 31   | 51         | 100  | 109  | 64        | 146   | 57   | 874   |
| 4:30 PM                       | 28         | 73   | 44   | 43        | 166   | 44   | 71         | 122  | 98   | 71        | 157   | 69   | 986   |
| 4:45 PM                       | 34         | 52   | 45   | 38        | 127   | 27   | 70         | 132  | 117  | 81        | 163   | 54   | 940   |
| 5:00 PM                       | 20         | 55   | 37   | 29        | 99    | 24   | 43         | 95   | 102  | 51        | 163   | 66   | 784   |
| 5:15 PM                       | 25         | 62   | 47   | 47        | 134   | 23   | 62         | 124  | 120  | 65        | 164   | 89   | 962   |
| 5:30 PM                       | 24         | 64   | 33   | 53        | 136   | 26   | 78         | 96   | 110  | 55        | 158   | 79   | 912   |
| 5:45 PM                       | 19         | 64   | 51   | 24        | 92    | 21   | 57         | 99   | 83   | 58        | 211   | 71   | 850   |
| Total                         | 185        | 521  | 341  | 298       | 1,069 | 217  | 487        | 879  | 845  | 524       | 1,336 | 551  | 7,253 |

PM Intersection Peak Hour : **4:00 PM - 5:00 PM**

Intersection PHF : **0.95**

|              | Southbound |       |       | Westbound |       |       | Northbound |       |       | Eastbound |      |       | TOTAL |
|--------------|------------|-------|-------|-----------|-------|-------|------------|-------|-------|-----------|------|-------|-------|
|              | Right      | Thru  | Left  | Right     | Thru  | Left  | Right      | Thru  | Left  | Right     | Thru | Left  |       |
| Volume       | 97         | 276   | 173   | 145       | 608   | 123   | 247        | 465   | 430   | 295       | 640  | 246   | 3745  |
| PHF          | 0.71       | 0.873 | 0.961 | 0.843     | 0.916 | 0.699 | 0.87       | 0.881 | 0.919 | 0.91      | 0.92 | 0.891 | 0.95  |
| Movement PHF |            | 0.94  |       |           | 0.87  |       |            | 0.89  |       |           | 0.93 |       | 0.95  |

# Turn Count Summary

Accurate Video Counts Inc  
info@accuratevideocounts.com  
(619) 987-5136



**Location:** Duenda Road @ West Bernardo Drive

**Date of Count:** Tuesday, May 19, 2015

**Analysts:** LV/CD

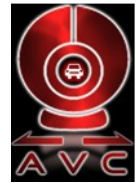
**Weather:** Sunny

**AVC Proj No:** 15-0351



# Vehicular Count

Accurate Video Counts Inc  
info@accuratevideocounts.com  
(619) 987-5136



**Location:** Duenda Road @ West Bernardo Drive

| AM Period (7:00 AM - 9:00 AM) |            |      |      |           |      |      |            |      |      |           |      |      |       |
|-------------------------------|------------|------|------|-----------|------|------|------------|------|------|-----------|------|------|-------|
|                               | Southbound |      |      | Westbound |      |      | Northbound |      |      | Eastbound |      |      | TOTAL |
|                               | Right      | Thru | Left | Right     | Thru | Left | Right      | Thru | Left | Right     | Thru | Left |       |
| 7:00 AM                       | 0          | 41   | 21   | 8         | 7    | 18   | 21         | 21   | 6    | 41        | 64   | 6    | 254   |
| 7:15 AM                       | 1          | 49   | 23   | 11        | 11   | 18   | 12         | 19   | 5    | 26        | 21   | 4    | 200   |
| 7:30 AM                       | 8          | 66   | 24   | 10        | 23   | 43   | 21         | 21   | 10   | 33        | 26   | 2    | 287   |
| 7:45 AM                       | 1          | 59   | 29   | 13        | 13   | 21   | 17         | 27   | 6    | 35        | 38   | 5    | 264   |
| 8:00 AM                       | 1          | 49   | 21   | 12        | 7    | 22   | 16         | 33   | 8    | 38        | 47   | 8    | 262   |
| 8:15 AM                       | 0          | 44   | 23   | 5         | 8    | 16   | 20         | 19   | 6    | 42        | 59   | 5    | 247   |
| 8:30 AM                       | 1          | 47   | 23   | 11        | 10   | 16   | 12         | 19   | 5    | 25        | 18   | 3    | 190   |
| 8:45 AM                       | 1          | 38   | 16   | 7         | 6    | 14   | 11         | 23   | 6    | 24        | 17   | 6    | 169   |
| Total                         | 13         | 393  | 180  | 77        | 85   | 168  | 130        | 182  | 52   | 264       | 290  | 39   | 1,873 |

AM Intersection Peak Hour : **7:30 AM - 8:30 AM**

Intersection PHF : **0.92**

|              | Southbound |      |      | Westbound |      |      | Northbound |      |      | Eastbound |      |      | TOTAL |
|--------------|------------|------|------|-----------|------|------|------------|------|------|-----------|------|------|-------|
|              | Right      | Thru | Left | Right     | Thru | Left | Right      | Thru | Left | Right     | Thru | Left |       |
| Volume       | 10         | 218  | 97   | 40        | 51   | 102  | 74         | 100  | 30   | 148       | 170  | 20   | 1,060 |
| PHF          | 0.31       | 0.83 | 0.84 | 0.77      | 0.55 | 0.59 | 0.88       | 0.76 | 0.75 | 0.88      | 0.72 | 0.63 | 0.92  |
| Movement PHF |            | 0.83 |      |           | 0.63 |      |            | 0.89 |      |           | 0.80 |      | 0.92  |

| PM Period (4:00 PM - 6:00 PM) |            |      |      |           |      |      |            |      |      |           |      |      |       |
|-------------------------------|------------|------|------|-----------|------|------|------------|------|------|-----------|------|------|-------|
|                               | Southbound |      |      | Westbound |      |      | Northbound |      |      | Eastbound |      |      | TOTAL |
|                               | Right      | Thru | Left | Right     | Thru | Left | Right      | Thru | Left | Right     | Thru | Left |       |
| 4:00 PM                       | 6          | 16   | 28   | 32        | 17   | 16   | 26         | 78   | 15   | 10        | 19   | 4    | 267   |
| 4:15 PM                       | 5          | 63   | 32   | 20        | 14   | 25   | 17         | 30   | 8    | 37        | 29   | 6    | 286   |
| 4:30 PM                       | 5          | 68   | 20   | 10        | 22   | 39   | 21         | 17   | 7    | 27        | 26   | 4    | 266   |
| 4:45 PM                       | 1          | 48   | 25   | 11        | 12   | 18   | 12         | 27   | 6    | 31        | 32   | 3    | 226   |
| 5:00 PM                       | 0          | 44   | 23   | 5         | 8    | 16   | 20         | 19   | 6    | 42        | 59   | 5    | 247   |
| 5:15 PM                       | 1          | 66   | 31   | 16        | 11   | 23   | 23         | 26   | 9    | 37        | 30   | 5    | 278   |
| 5:30 PM                       | 3          | 66   | 31   | 13        | 15   | 23   | 12         | 35   | 7    | 37        | 23   | 8    | 273   |
| 5:45 PM                       | 8          | 25   | 21   | 29        | 36   | 11   | 35         | 67   | 44   | 14        | 19   | 3    | 312   |
| Total                         | 29         | 396  | 211  | 136       | 135  | 171  | 166        | 299  | 102  | 235       | 237  | 38   | 2,155 |

PM Intersection Peak Hour : **5:00 PM - 6:00 PM**

Intersection PHF : **0.89**

|              | Southbound |       |       | Westbound |       |       | Northbound |       |       | Eastbound |       |       | TOTAL |
|--------------|------------|-------|-------|-----------|-------|-------|------------|-------|-------|-----------|-------|-------|-------|
|              | Right      | Thru  | Left  | Right     | Thru  | Left  | Right      | Thru  | Left  | Right     | Thru  | Left  |       |
| Volume       | 12         | 201   | 106   | 63        | 70    | 73    | 90         | 147   | 66    | 130       | 131   | 21    | 1110  |
| PHF          | 0.38       | 0.761 | 0.855 | 0.543     | 0.486 | 0.793 | 0.643      | 0.549 | 0.375 | 0.774     | 0.555 | 0.656 | 0.89  |
| Movement PHF |            | 0.80  |       |           | 0.68  |       |            | 0.52  |       |           | 0.67  |       | 0.89  |

# Turn Count Summary

Accurate Video Counts Inc  
info@accuratevideocounts.com  
(619) 987-5136



**Location:** West Bernardo Drive @ Via Del Campo

**Date of Count:** Tuesday, May 19, 2015

**Analysts:** LV/CD

**Weather:** Sunny

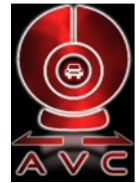
**AVC Proj No:** 15-0351





# Vehicular Count

Accurate Video Counts Inc  
info@accuratevideocounts.com  
(619) 987-5136



**Location:** West Bernardo Drive @ Via Del Campo

| AM Period (7:00 AM - 9:00 AM) |            |      |           |      |  |           |       |
|-------------------------------|------------|------|-----------|------|--|-----------|-------|
|                               | Southbound |      | Westbound |      |  | Eastbound |       |
|                               | Right      | Left | Right     | Thru |  | Thru      | Left  |
| 7:00 AM                       | 7          | 7    | 18        | 50   |  | 71        | 47    |
| 7:15 AM                       | 7          | 13   | 18        | 69   |  | 113       | 50    |
| 7:30 AM                       | 9          | 9    | 32        | 72   |  | 93        | 74    |
| 7:45 AM                       | 9          | 12   | 39        | 97   |  | 157       | 91    |
| 8:00 AM                       | 13         | 14   | 44        | 61   |  | 131       | 112   |
| 8:15 AM                       | 14         | 12   | 35        | 41   |  | 125       | 88    |
| 8:30 AM                       | 5          | 13   | 43        | 46   |  | 97        | 76    |
| 8:45 AM                       | 6          | 20   | 50        | 54   |  | 102       | 84    |
| Total                         | 70         | 100  | 279       | 490  |  | 889       | 622   |
|                               |            |      |           |      |  |           | 2,450 |

AM Intersection Peak Hour : **7:30 AM - 8:30 AM**

Intersection PHF : **0.85**

|              | Southbound |      | Westbound |      |  | Eastbound |      | TOTAL |
|--------------|------------|------|-----------|------|--|-----------|------|-------|
|              | Right      | Left | Right     | Thru |  | Thru      | Left |       |
| Volume       | 45         | 47   | 150       | 271  |  | 506       | 365  | 1,384 |
| PHF          | 0.80       | 0.84 | 0.85      | 0.70 |  | 0.81      | 0.81 | 0.85  |
| Movement PHF |            | 0.85 |           | 0.77 |  | 0.88      |      | 0.85  |

| PM Period (4:00 PM - 6:00 PM) |            |      |           |      |  |           |      |       |
|-------------------------------|------------|------|-----------|------|--|-----------|------|-------|
|                               | Southbound |      | Westbound |      |  | Eastbound |      | TOTAL |
|                               | Right      | Left | Right     | Thru |  | Thru      | Left |       |
| 4:00 PM                       | 56         | 28   | 10        | 78   |  | 81        | 6    | 259   |
| 4:15 PM                       | 65         | 29   | 9         | 75   |  | 103       | 10   | 291   |
| 4:30 PM                       | 66         | 38   | 9         | 89   |  | 80        | 10   | 292   |
| 4:45 PM                       | 68         | 27   | 10        | 102  |  | 103       | 8    | 318   |
| 5:00 PM                       | 113        | 52   | 6         | 132  |  | 89        | 10   | 402   |
| 5:15 PM                       | 98         | 29   | 8         | 90   |  | 105       | 10   | 340   |
| 5:30 PM                       | 67         | 40   | 14        | 102  |  | 98        | 4    | 325   |
| 5:45 PM                       | 55         | 36   | 6         | 71   |  | 61        | 7    | 236   |
| Total                         | 588        | 279  | 72        | 739  |  | 720       | 65   | 2,463 |

PM Intersection Peak Hour : **4:45 PM - 5:45 PM**

Intersection PHF : **0.86**

|              | Southbound |       | Westbound |       |  | Eastbound |      | TOTAL |
|--------------|------------|-------|-----------|-------|--|-----------|------|-------|
|              | Right      | Left  | Right     | Thru  |  | Thru      | Left |       |
| Volume       | 346        | 148   | 38        | 426   |  | 395       | 32   | 1385  |
| PHF          | 0.77       | 0.712 | 0.679     | 0.807 |  | 0.94      | 0.8  | 0.86  |
| Movement PHF |            | 0.75  |           | 0.84  |  | 0.93      |      | 0.86  |



# Turn Count Summary

Accurate Video Counts Inc  
info@accuratevideocounts.com  
(619) 987-5136



**Location:** West Bernardo Drive @ Bernardo Center Drive

**Date of Count:** Tuesday, May 19, 2015

**Analysts:** LV/CD

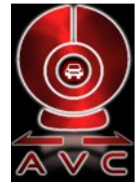
**Weather:** Sunny

**AVC Proj No:** 15-0351



# Vehicular Count

Accurate Video Counts Inc  
info@accuratevideocounts.com  
(619) 987-5136



**Location:** West Bernardo Drive @ Bernardo Center Drive

| AM Period (7:00 AM - 9:00 AM) |            |      |  |            |       |           |       |
|-------------------------------|------------|------|--|------------|-------|-----------|-------|
|                               | Southbound |      |  | Northbound |       | Eastbound |       |
|                               | Right      | Thru |  | Thru       | Left  | Right     | Left  |
| 7:00 AM                       | 97         | 132  |  | 89         | 112   | 42        | 12    |
| 7:15 AM                       | 130        | 97   |  | 89         | 103   | 47        | 10    |
| 7:30 AM                       | 150        | 111  |  | 128        | 132   | 46        | 12    |
| 7:45 AM                       | 134        | 113  |  | 94         | 113   | 53        | 15    |
| 8:00 AM                       | 109        | 147  |  | 109        | 122   | 47        | 14    |
| 8:15 AM                       | 154        | 111  |  | 126        | 145   | 42        | 12    |
| 8:30 AM                       | 195        | 133  |  | 108        | 119   | 60        | 11    |
| 8:45 AM                       | 224        | 93   |  | 107        | 215   | 37        | 18    |
| Total                         | 1,193      | 937  |  | 850        | 1,061 | 374       | 104   |
|                               |            |      |  |            |       |           | 4,519 |

AM Intersection Peak Hour : **8:00 AM - 9:00 AM**

Intersection PHF : **0.89**

|              | Southbound |      |  | Northbound |      | Eastbound |      | TOTAL |
|--------------|------------|------|--|------------|------|-----------|------|-------|
|              | Right      | Thru |  | Thru       | Left | Right     | Left |       |
| Volume       | 682        | 484  |  | 450        | 601  | 186       | 55   | 2,458 |
| PHF          | 0.76       | 0.82 |  | 0.89       | 0.70 | 0.78      | 0.76 | 0.89  |
| Movement PHF |            | 0.89 |  | 0.82       |      | 0.85      |      | 0.89  |

| PM Period (4:00 PM - 6:00 PM) |            |      |  |            |      |           |       |
|-------------------------------|------------|------|--|------------|------|-----------|-------|
|                               | Southbound |      |  | Northbound |      | Eastbound |       |
|                               | Right      | Thru |  | Thru       | Left | Right     | Left  |
| 4:00 PM                       | 19         | 75   |  | 124        | 50   | 115       | 141   |
| 4:15 PM                       | 97         | 135  |  | 93         | 112  | 66        | 73    |
| 4:30 PM                       | 95         | 115  |  | 81         | 92   | 119       | 90    |
| 4:45 PM                       | 129        | 103  |  | 88         | 108  | 96        | 42    |
| 5:00 PM                       | 97         | 112  |  | 85         | 92   | 112       | 66    |
| 5:15 PM                       | 110        | 93   |  | 84         | 142  | 96        | 54    |
| 5:30 PM                       | 126        | 67   |  | 97         | 113  | 95        | 57    |
| 5:45 PM                       | 16         | 97   |  | 119        | 61   | 166       | 152   |
| Total                         | 689        | 797  |  | 771        | 770  | 865       | 675   |
|                               |            |      |  |            |      |           | 4,567 |

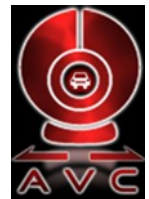
PM Intersection Peak Hour : **5:00 PM - 6:00 PM**

Intersection PHF : **0.94**

|              | Southbound |       |  | Northbound |       | Eastbound |       | TOTAL |
|--------------|------------|-------|--|------------|-------|-----------|-------|-------|
|              | Right      | Thru  |  | Thru       | Left  | Right     | Left  |       |
| Volume       | 349        | 369   |  | 385        | 408   | 469       | 329   | 2309  |
| PHF          | 0.69       | 0.824 |  | 0.809      | 0.718 | 0.706     | 0.541 | 0.94  |
| Movement PHF |            | 0.86  |  | 0.88       |       | 0.63      |       | 0.94  |

# 24 Hour Segment Count

Accurate Video Counts Inc  
info@accuratevideocounts.com  
(619) 987-5136



**Location:** 1.Rancho Bernardo Road, Camino San Bernardo to Via Del Campo

**Orientation:** East-West

**Date of Count:** Tuesday, May 19, 2015

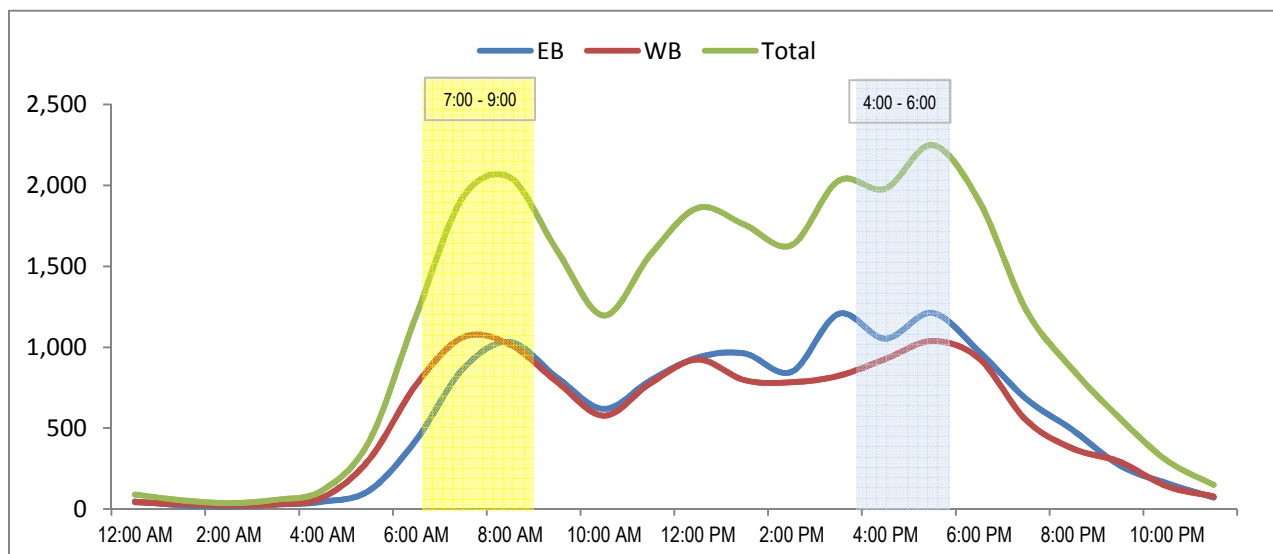
**Analysts:** DASH

**Weather:** Sunny

**AVC Proj. No:** 15-0351

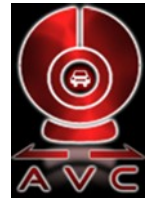
| 24 Hour Segment Volume |  |               |       |        |                     | 26,836             |       |               |        |       |
|------------------------|--|---------------|-------|--------|---------------------|--------------------|-------|---------------|--------|-------|
| Time                   |  | Hourly Volume |       |        |                     | Time               |       | Hourly Volume |        |       |
|                        |  | EB            | WB    | Total  |                     |                    |       | EB            | WB     | Total |
| 12:00 AM - 1:00 AM     |  | 47            | 43    | 90     |                     | 12:00 PM - 1:00 PM |       | 937           | 924    | 1,861 |
| 1:00 AM - 2:00 AM      |  | 23            | 31    | 54     |                     | 1:00 PM - 2:00 PM  |       | 961           | 796    | 1,757 |
| 2:00 AM - 3:00 AM      |  | 14            | 22    | 36     |                     | 2:00 PM - 3:00 PM  |       | 848           | 783    | 1,631 |
| 3:00 AM - 4:00 AM      |  | 28            | 29    | 57     |                     | 3:00 PM - 4:00 PM  |       | 1,206         | 823    | 2,029 |
| 4:00 AM - 5:00 AM      |  | 45            | 71    | 116    |                     | 4:00 PM - 5:00 PM  |       | 1,053         | 927    | 1,980 |
| 5:00 AM - 6:00 AM      |  | 115           | 308   | 423    |                     | 5:00 PM - 6:00 PM  |       | 1,212         | 1,038  | 2,250 |
| 6:00 AM - 7:00 AM      |  | 428           | 770   | 1,198  |                     | 6:00 PM - 7:00 PM  |       | 973           | 930    | 1,903 |
| 7:00 AM - 8:00 AM      |  | 868           | 1,062 | 1,930  |                     | 7:00 PM - 8:00 PM  |       | 682           | 550    | 1,232 |
| 8:00 AM - 9:00 AM      |  | 1,033         | 1,016 | 2,049  |                     | 8:00 PM - 9:00 PM  |       | 487           | 373    | 860   |
| 9:00 AM - 10:00 AM     |  | 813           | 786   | 1,599  | 9:00 PM - 10:00 PM  |                    | 269   | 292           | 561    |       |
| 10:00 AM - 11:00 AM    |  | 619           | 577   | 1,196  | 10:00 PM - 11:00 PM |                    | 159   | 141           | 300    |       |
| 11:00 AM - 12:00 PM    |  | 796           | 779   | 1575   | 11:00 PM - 12:00 AM |                    | 71    | 78            | 149    |       |
| Total                  |  | 4,829         | 5,494 | 10,323 | Total               |                    | 8,858 | 7,655         | 16,513 |       |

|                |           |               |               |                |           |               |               |
|----------------|-----------|---------------|---------------|----------------|-----------|---------------|---------------|
| <b>24-Hour</b> | <b>EB</b> | <b>Volume</b> | <b>13,687</b> | <b>24-Hour</b> | <b>WB</b> | <b>Volume</b> | <b>13,149</b> |
|----------------|-----------|---------------|---------------|----------------|-----------|---------------|---------------|



# 24 Hour Segment Count

Accurate Video Counts Inc  
info@accuratevideocounts.com  
(619) 987-5136



**Location:** 2.Rancho Bernardo Road, Via Del Campo to Olmeda Way

**Orientation:** East-West

**Date of Count:** Tuesday, May 19, 2015

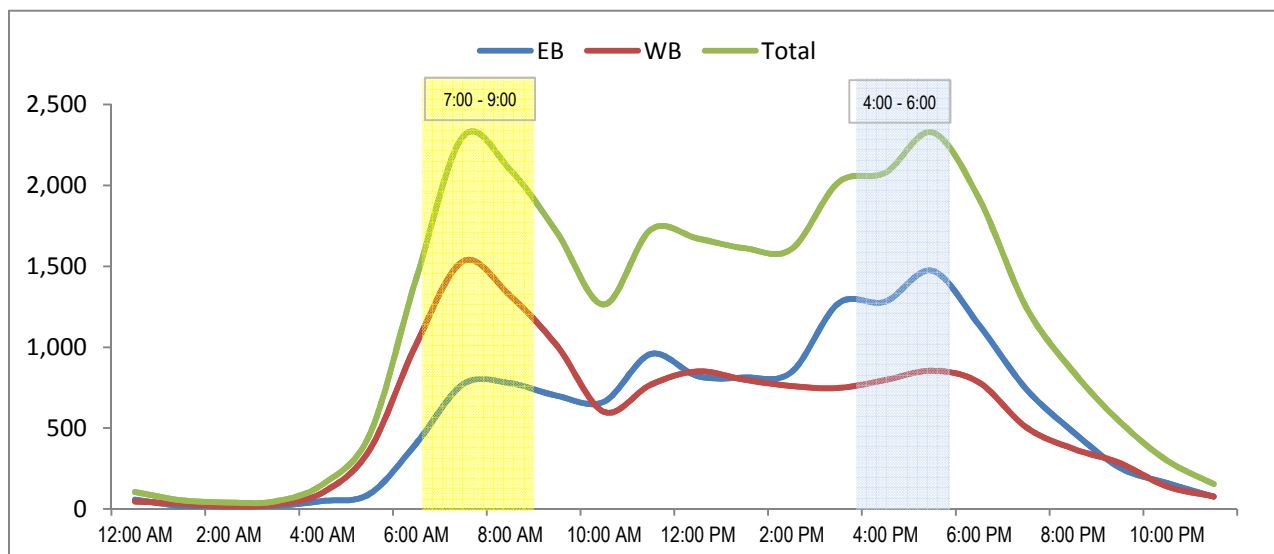
**Analysts:** DASH

**Weather:** Sunny

**AVC Proj. No:** 15-0351

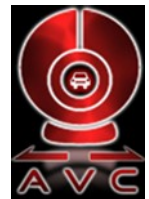
| 24 Hour Segment Volume |  |               |       |        |                     | 27,713             |       |               |        |       |
|------------------------|--|---------------|-------|--------|---------------------|--------------------|-------|---------------|--------|-------|
| Time                   |  | Hourly Volume |       |        |                     | Time               |       | Hourly Volume |        |       |
|                        |  | EB            | WB    | Total  |                     |                    |       | EB            | WB     | Total |
| 12:00 AM - 1:00 AM     |  | 58            | 47    | 105    |                     | 12:00 PM - 1:00 PM |       | 821           | 851    | 1,672 |
| 1:00 AM - 2:00 AM      |  | 20            | 34    | 54     |                     | 1:00 PM - 2:00 PM  |       | 813           | 799    | 1,612 |
| 2:00 AM - 3:00 AM      |  | 24            | 16    | 40     |                     | 2:00 PM - 3:00 PM  |       | 847           | 760    | 1,607 |
| 3:00 AM - 4:00 AM      |  | 20            | 28    | 48     |                     | 3:00 PM - 4:00 PM  |       | 1,271         | 748    | 2,019 |
| 4:00 AM - 5:00 AM      |  | 50            | 102   | 152    |                     | 4:00 PM - 5:00 PM  |       | 1,282         | 797    | 2,079 |
| 5:00 AM - 6:00 AM      |  | 93            | 364   | 457    |                     | 5:00 PM - 6:00 PM  |       | 1,473         | 855    | 2,328 |
| 6:00 AM - 7:00 AM      |  | 406           | 1,021 | 1,427  |                     | 6:00 PM - 7:00 PM  |       | 1,136         | 782    | 1,918 |
| 7:00 AM - 8:00 AM      |  | 772           | 1,532 | 2,304  |                     | 7:00 PM - 8:00 PM  |       | 743           | 506    | 1,249 |
| 8:00 AM - 9:00 AM      |  | 778           | 1,319 | 2,097  |                     | 8:00 PM - 9:00 PM  |       | 478           | 373    | 851   |
| 9:00 AM - 10:00 AM     |  | 700           | 1,009 | 1,709  |                     | 9:00 PM - 10:00 PM |       | 255           | 284    | 539   |
| 10:00 AM - 11:00 AM    |  | 663           | 601   | 1,264  | 10:00 PM - 11:00 PM |                    | 161   | 140           | 301    |       |
| 11:00 AM - 12:00 PM    |  | 958           | 769   | 1727   | 11:00 PM - 12:00 AM |                    | 76    | 78            | 154    |       |
| Total                  |  | 4,542         | 6,842 | 11,384 | Total               |                    | 9,356 | 6,973         | 16,329 |       |

|                |           |               |               |                |           |               |               |
|----------------|-----------|---------------|---------------|----------------|-----------|---------------|---------------|
| <b>24-Hour</b> | <b>EB</b> | <b>Volume</b> | <b>13,898</b> | <b>24-Hour</b> | <b>WB</b> | <b>Volume</b> | <b>13,815</b> |
|----------------|-----------|---------------|---------------|----------------|-----------|---------------|---------------|



# 24 Hour Segment Count

Accurate Video Counts Inc  
info@accuratevideocounts.com  
(619) 987-5136



**Location:** 3.Rancho Bernardo Road, Olmeda Way to West Bernardo Drive

**Orientation:** East-West

**Date of Count:** Tuesday, May 19, 2015

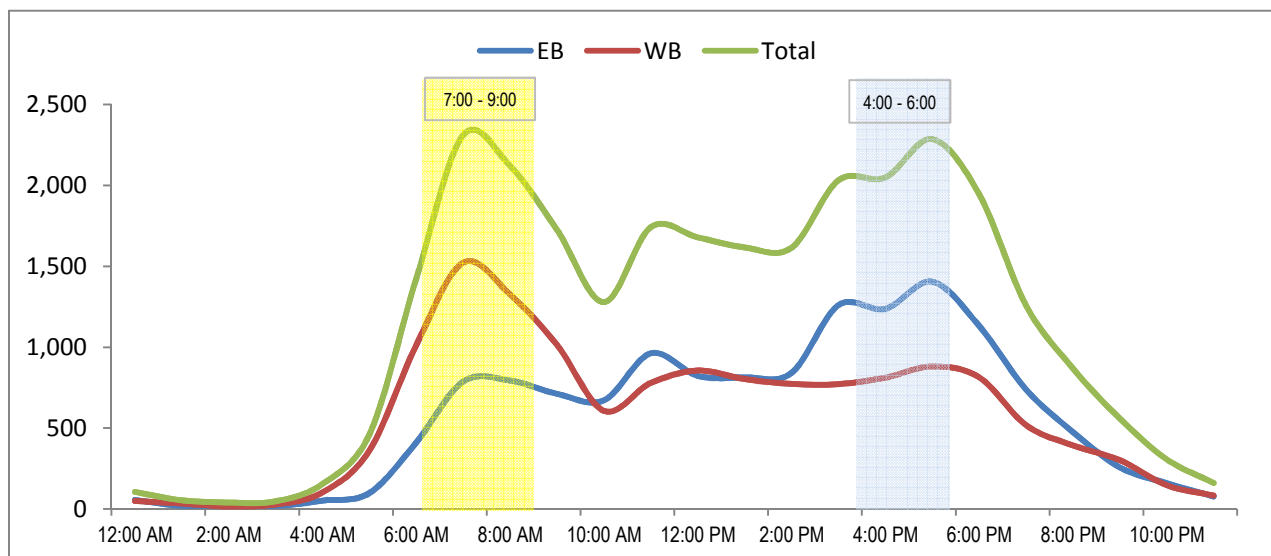
**Analysts:** DASH

**Weather:** Sunny

**AVC Proj. No:** 15-0351

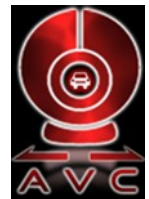
| 24 Hour Segment Volume |  |               |       |        |                     | 27,846             |       |               |        |       |
|------------------------|--|---------------|-------|--------|---------------------|--------------------|-------|---------------|--------|-------|
| Time                   |  | Hourly Volume |       |        |                     | Time               |       | Hourly Volume |        |       |
|                        |  | EB            | WB    | Total  |                     |                    |       | EB            | WB     | Total |
| 12:00 AM - 1:00 AM     |  | 57            | 49    | 106    |                     | 12:00 PM - 1:00 PM |       | 823           | 856    | 1,679 |
| 1:00 AM - 2:00 AM      |  | 20            | 34    | 54     |                     | 1:00 PM - 2:00 PM  |       | 814           | 803    | 1,617 |
| 2:00 AM - 3:00 AM      |  | 24            | 16    | 40     |                     | 2:00 PM - 3:00 PM  |       | 842           | 773    | 1,615 |
| 3:00 AM - 4:00 AM      |  | 20            | 28    | 48     |                     | 3:00 PM - 4:00 PM  |       | 1,260         | 772    | 2,032 |
| 4:00 AM - 5:00 AM      |  | 52            | 103   | 155    |                     | 4:00 PM - 5:00 PM  |       | 1,237         | 812    | 2,049 |
| 5:00 AM - 6:00 AM      |  | 99            | 362   | 461    |                     | 5:00 PM - 6:00 PM  |       | 1,405         | 881    | 2,286 |
| 6:00 AM - 7:00 AM      |  | 412           | 1,014 | 1,426  |                     | 6:00 PM - 7:00 PM  |       | 1,132         | 814    | 1,946 |
| 7:00 AM - 8:00 AM      |  | 788           | 1,523 | 2,311  |                     | 7:00 PM - 8:00 PM  |       | 739           | 519    | 1,258 |
| 8:00 AM - 9:00 AM      |  | 794           | 1,326 | 2,120  |                     | 8:00 PM - 9:00 PM  |       | 476           | 393    | 869   |
| 9:00 AM - 10:00 AM     |  | 712           | 1,014 | 1,726  | 9:00 PM - 10:00 PM  |                    | 257   | 302           | 559    |       |
| 10:00 AM - 11:00 AM    |  | 672           | 607   | 1,279  | 10:00 PM - 11:00 PM |                    | 160   | 147           | 307    |       |
| 11:00 AM - 12:00 PM    |  | 962           | 780   | 1742   | 11:00 PM - 12:00 AM |                    | 78    | 83            | 161    |       |
| Total                  |  | 4,612         | 6,856 | 11,468 | Total               |                    | 9,223 | 7,155         | 16,378 |       |

|                |           |               |               |                |           |               |               |
|----------------|-----------|---------------|---------------|----------------|-----------|---------------|---------------|
| <b>24-Hour</b> | <b>EB</b> | <b>Volume</b> | <b>13,835</b> | <b>24-Hour</b> | <b>WB</b> | <b>Volume</b> | <b>14,011</b> |
|----------------|-----------|---------------|---------------|----------------|-----------|---------------|---------------|



# 24 Hour Segment Count

Accurate Video Counts Inc  
info@accuratevideocounts.com  
(619) 987-5136



**Location:** 4.Rancho Bernardo Road, West Bernardo Drive to the I-15 Southbound Ramps

**Orientation:** East-West

**Date of Count:** Tuesday, May 19, 2015

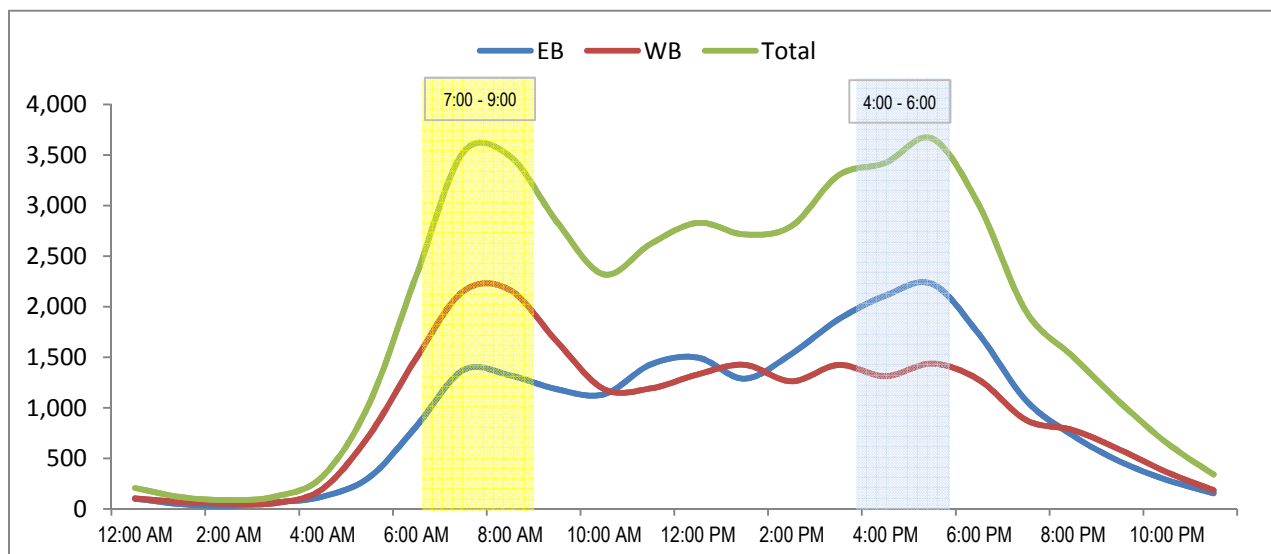
**Analysts:** DASH

**Weather:** Sunny

**AVC Proj. No:** 15-0351

| 24 Hour Segment Volume |  |               |        |        |                     | 46,260             |        |               |        |       |
|------------------------|--|---------------|--------|--------|---------------------|--------------------|--------|---------------|--------|-------|
| Time                   |  | Hourly Volume |        |        |                     | Time               |        | Hourly Volume |        |       |
|                        |  | EB            | WB     | Total  |                     |                    |        | EB            | WB     | Total |
| 12:00 AM - 1:00 AM     |  | 103           | 105    | 208    |                     | 12:00 PM - 1:00 PM |        | 1,498         | 1,332  | 2,830 |
| 1:00 AM - 2:00 AM      |  | 47            | 70     | 117    |                     | 1:00 PM - 2:00 PM  |        | 1,289         | 1,426  | 2,715 |
| 2:00 AM - 3:00 AM      |  | 34            | 54     | 88     |                     | 2:00 PM - 3:00 PM  |        | 1,535         | 1,263  | 2,798 |
| 3:00 AM - 4:00 AM      |  | 66            | 59     | 125    |                     | 3:00 PM - 4:00 PM  |        | 1,875         | 1,425  | 3,300 |
| 4:00 AM - 5:00 AM      |  | 123           | 200    | 323    |                     | 4:00 PM - 5:00 PM  |        | 2,110         | 1,313  | 3,423 |
| 5:00 AM - 6:00 AM      |  | 315           | 732    | 1,047  |                     | 5:00 PM - 6:00 PM  |        | 2,226         | 1,438  | 3,664 |
| 6:00 AM - 7:00 AM      |  | 818           | 1,493  | 2,311  |                     | 6:00 PM - 7:00 PM  |        | 1,726         | 1,276  | 3,002 |
| 7:00 AM - 8:00 AM      |  | 1,374         | 2,154  | 3,528  |                     | 7:00 PM - 8:00 PM  |        | 1,074         | 880    | 1,954 |
| 8:00 AM - 9:00 AM      |  | 1,322         | 2,165  | 3,487  |                     | 8:00 PM - 9:00 PM  |        | 726           | 781    | 1,507 |
| 9:00 AM - 10:00 AM     |  | 1,184         | 1,655  | 2,839  | 9:00 PM - 10:00 PM  |                    | 470    | 587           | 1,057  |       |
| 10:00 AM - 11:00 AM    |  | 1,134         | 1,186  | 2,320  | 10:00 PM - 11:00 PM |                    | 288    | 365           | 653    |       |
| 11:00 AM - 12:00 PM    |  | 1,430         | 1,193  | 2623   | 11:00 PM - 12:00 AM |                    | 156    | 185           | 341    |       |
| Total                  |  | 7,950         | 11,066 | 19,016 | Total               |                    | 14,973 | 12,271        | 27,244 |       |

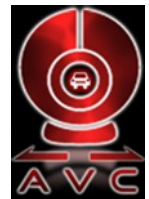
|                |           |               |               |                |           |               |               |
|----------------|-----------|---------------|---------------|----------------|-----------|---------------|---------------|
| <b>24-Hour</b> | <b>EB</b> | <b>Volume</b> | <b>22,923</b> | <b>24-Hour</b> | <b>WB</b> | <b>Volume</b> | <b>23,337</b> |
|----------------|-----------|---------------|---------------|----------------|-----------|---------------|---------------|





# 24 Hour Segment Count

Accurate Video Counts Inc  
info@accuratevideocounts.com  
(619) 987-5136



**Location:** 5.Rancho Bernardo Road, I-15 Northbound Ramps to Bernardo Center Drive

**Orientation:** East-West

**Date of Count:** Tuesday, May 19, 2015

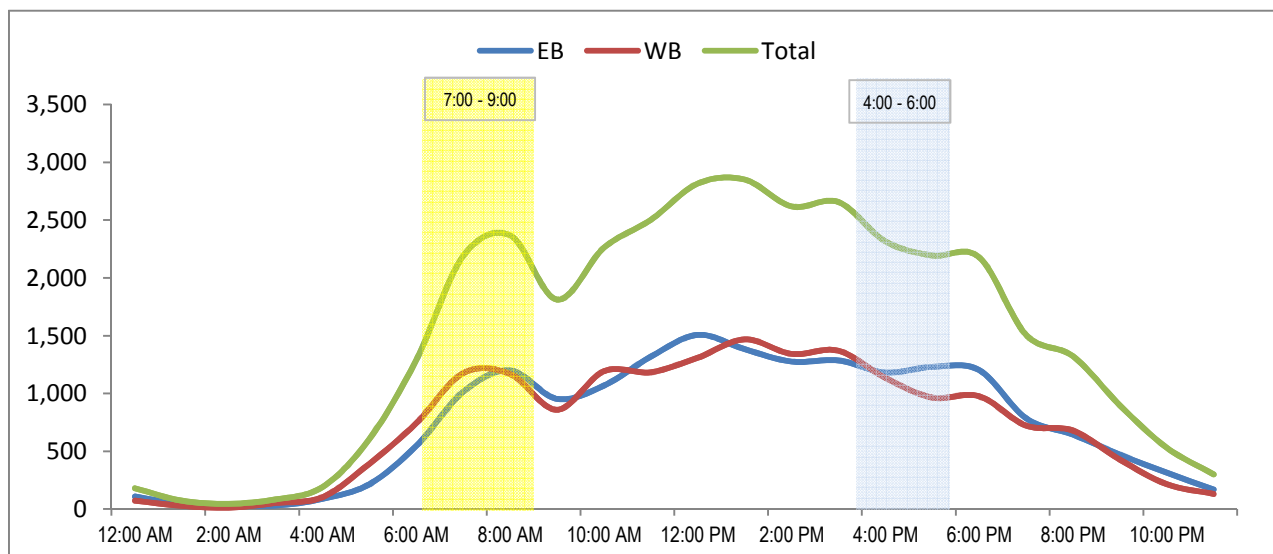
**Analysts:** DASH

**Weather:** Sunny

**AVC Proj. No:** 15-0351

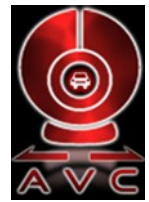
| 24 Hour Segment Volume |  |               |       |        |                     | 35,789             |        |               |        |       |
|------------------------|--|---------------|-------|--------|---------------------|--------------------|--------|---------------|--------|-------|
| Time                   |  | Hourly Volume |       |        |                     | Time               |        | Hourly Volume |        |       |
|                        |  | EB            | WB    | Total  |                     |                    |        | EB            | WB     | Total |
| 12:00 AM - 1:00 AM     |  | 108           | 72    | 180    |                     | 12:00 PM - 1:00 PM |        | 1,507         | 1,309  | 2,816 |
| 1:00 AM - 2:00 AM      |  | 44            | 28    | 72     |                     | 1:00 PM - 2:00 PM  |        | 1,383         | 1,468  | 2,851 |
| 2:00 AM - 3:00 AM      |  | 33            | 13    | 46     |                     | 2:00 PM - 3:00 PM  |        | 1,276         | 1,342  | 2,618 |
| 3:00 AM - 4:00 AM      |  | 31            | 52    | 83     |                     | 3:00 PM - 4:00 PM  |        | 1,286         | 1,370  | 2,656 |
| 4:00 AM - 5:00 AM      |  | 88            | 103   | 191    |                     | 4:00 PM - 5:00 PM  |        | 1,181         | 1,135  | 2,316 |
| 5:00 AM - 6:00 AM      |  | 215           | 392   | 607    |                     | 5:00 PM - 6:00 PM  |        | 1,230         | 964    | 2,194 |
| 6:00 AM - 7:00 AM      |  | 547           | 743   | 1,290  |                     | 6:00 PM - 7:00 PM  |        | 1,202         | 976    | 2,178 |
| 7:00 AM - 8:00 AM      |  | 1,014         | 1,176 | 2,190  |                     | 7:00 PM - 8:00 PM  |        | 786           | 722    | 1,508 |
| 8:00 AM - 9:00 AM      |  | 1,200         | 1,168 | 2,368  |                     | 8:00 PM - 9:00 PM  |        | 643           | 679    | 1,322 |
| 9:00 AM - 10:00 AM     |  | 953           | 859   | 1,812  |                     | 9:00 PM - 10:00 PM |        | 470           | 427    | 897   |
| 10:00 AM - 11:00 AM    |  | 1,068         | 1,193 | 2,261  | 10:00 PM - 11:00 PM |                    | 315    | 215           | 530    |       |
| 11:00 AM - 12:00 PM    |  | 1,319         | 1,184 | 2503   | 11:00 PM - 12:00 AM |                    | 169    | 131           | 300    |       |
| Total                  |  | 6,620         | 6,983 | 13,603 | Total               |                    | 11,448 | 10,738        | 22,186 |       |

|                |           |               |               |                |           |               |               |
|----------------|-----------|---------------|---------------|----------------|-----------|---------------|---------------|
| <b>24-Hour</b> | <b>EB</b> | <b>Volume</b> | <b>18,068</b> | <b>24-Hour</b> | <b>WB</b> | <b>Volume</b> | <b>17,721</b> |
|----------------|-----------|---------------|---------------|----------------|-----------|---------------|---------------|



# 24 Hour Segment Count

Accurate Video Counts Inc  
info@accuratevideocounts.com  
(619) 987-5136



**Location:** 6.Rancho Bernardo Road, Bernardo Center Drive to Bernardo Oaks Drive

**Orientation:** East-West

**Date of Count:** Tuesday, May 19, 2015

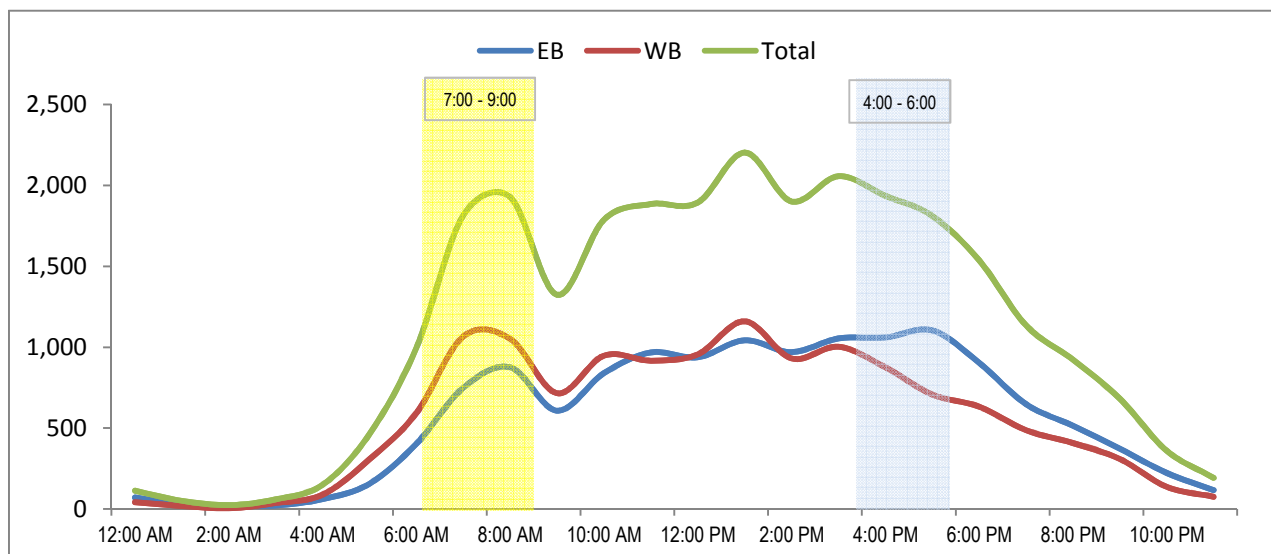
**Analysts:** DASH

**Weather:** Sunny

**AVC Proj. No:** 15-0351

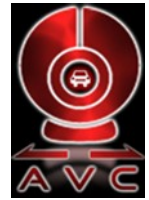
| 24 Hour Segment Volume |  |               |       |        |                     | 27,230             |       |               |        |       |
|------------------------|--|---------------|-------|--------|---------------------|--------------------|-------|---------------|--------|-------|
| Time                   |  | Hourly Volume |       |        |                     | Time               |       | Hourly Volume |        |       |
|                        |  | EB            | WB    | Total  |                     |                    |       | EB            | WB     | Total |
| 12:00 AM - 1:00 AM     |  | 71            | 42    | 113    |                     | 12:00 PM - 1:00 PM |       | 938           | 956    | 1,894 |
| 1:00 AM - 2:00 AM      |  | 32            | 19    | 51     |                     | 1:00 PM - 2:00 PM  |       | 1,043         | 1,160  | 2,203 |
| 2:00 AM - 3:00 AM      |  | 20            | 4     | 24     |                     | 2:00 PM - 3:00 PM  |       | 970           | 931    | 1,901 |
| 3:00 AM - 4:00 AM      |  | 23            | 37    | 60     |                     | 3:00 PM - 4:00 PM  |       | 1,054         | 1,003  | 2,057 |
| 4:00 AM - 5:00 AM      |  | 61            | 89    | 150    |                     | 4:00 PM - 5:00 PM  |       | 1,060         | 876    | 1,936 |
| 5:00 AM - 6:00 AM      |  | 156           | 307   | 463    |                     | 5:00 PM - 6:00 PM  |       | 1,104         | 708    | 1,812 |
| 6:00 AM - 7:00 AM      |  | 403           | 593   | 996    |                     | 6:00 PM - 7:00 PM  |       | 904           | 633    | 1,537 |
| 7:00 AM - 8:00 AM      |  | 749           | 1,066 | 1,815  |                     | 7:00 PM - 8:00 PM  |       | 648           | 487    | 1,135 |
| 8:00 AM - 9:00 AM      |  | 876           | 1,052 | 1,928  |                     | 8:00 PM - 9:00 PM  |       | 515           | 408    | 923   |
| 9:00 AM - 10:00 AM     |  | 608           | 716   | 1,324  | 9:00 PM - 10:00 PM  |                    | 373   | 309           | 682    |       |
| 10:00 AM - 11:00 AM    |  | 840           | 948   | 1,788  | 10:00 PM - 11:00 PM |                    | 223   | 137           | 360    |       |
| 11:00 AM - 12:00 PM    |  | 968           | 917   | 1885   | 11:00 PM - 12:00 AM |                    | 117   | 76            | 193    |       |
| Total                  |  | 4,807         | 5,790 | 10,597 | Total               |                    | 8,949 | 7,684         | 16,633 |       |

|                |           |               |               |                |           |               |               |
|----------------|-----------|---------------|---------------|----------------|-----------|---------------|---------------|
| <b>24-Hour</b> | <b>EB</b> | <b>Volume</b> | <b>13,756</b> | <b>24-Hour</b> | <b>WB</b> | <b>Volume</b> | <b>13,474</b> |
|----------------|-----------|---------------|---------------|----------------|-----------|---------------|---------------|



# 24 Hour Segment Count

Accurate Video Counts Inc  
info@accuratevideocounts.com  
(619) 987-5136



**Location:** 7. W. Bernardo Dr, btwn Via Frontera and Technology Dr

**Orientation:** North-South

**Date of Count:** Tuesday, June 09, 2015

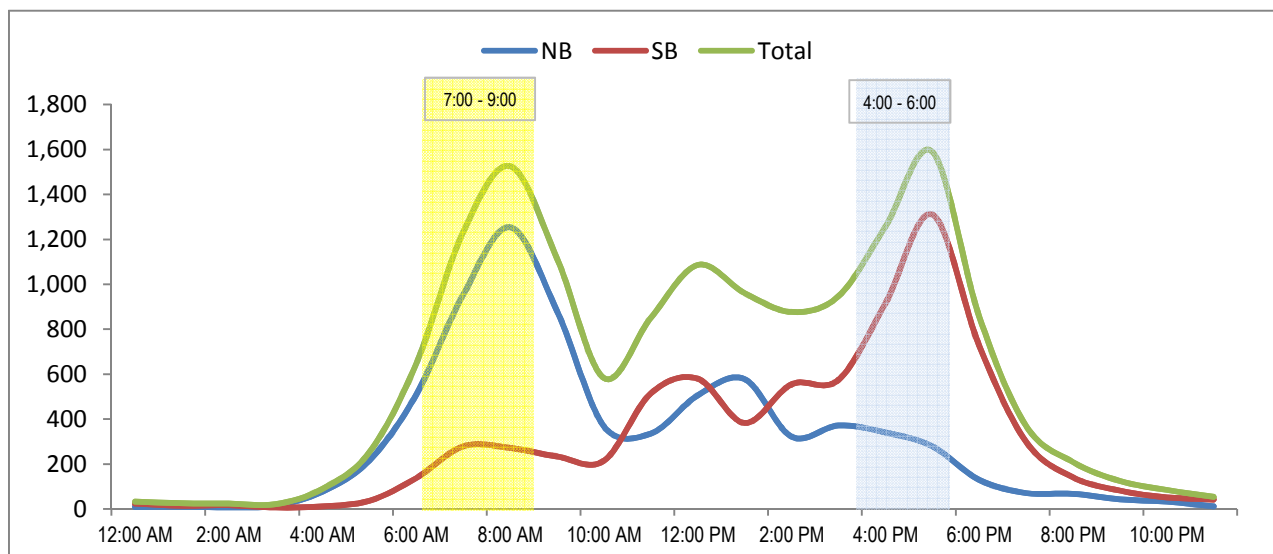
**Analysts:** DASH

**Weather:** Sunny

**AVC Proj. No:** 15-0364

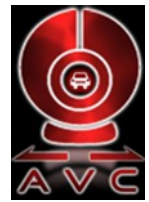
| 24 Hour Segment Volume |  |               |       |       |                     | 14,822             |       |               |       |       |
|------------------------|--|---------------|-------|-------|---------------------|--------------------|-------|---------------|-------|-------|
| Time                   |  | Hourly Volume |       |       |                     | Time               |       | Hourly Volume |       |       |
|                        |  | NB            | SB    | Total |                     |                    |       | NB            | SB    | Total |
| 12:00 AM - 1:00 AM     |  | 9             | 24    | 33    |                     | 12:00 PM - 1:00 PM |       | 506           | 580   | 1,086 |
| 1:00 AM - 2:00 AM      |  | 11            | 15    | 26    |                     | 1:00 PM - 2:00 PM  |       | 578           | 383   | 961   |
| 2:00 AM - 3:00 AM      |  | 7             | 17    | 24    |                     | 2:00 PM - 3:00 PM  |       | 322           | 555   | 877   |
| 3:00 AM - 4:00 AM      |  | 15            | 7     | 22    |                     | 3:00 PM - 4:00 PM  |       | 372           | 575   | 947   |
| 4:00 AM - 5:00 AM      |  | 78            | 12    | 90    |                     | 4:00 PM - 5:00 PM  |       | 341           | 915   | 1,256 |
| 5:00 AM - 6:00 AM      |  | 216           | 37    | 253   |                     | 5:00 PM - 6:00 PM  |       | 279           | 1,311 | 1,590 |
| 6:00 AM - 7:00 AM      |  | 510           | 138   | 648   |                     | 6:00 PM - 7:00 PM  |       | 130           | 728   | 858   |
| 7:00 AM - 8:00 AM      |  | 954           | 279   | 1,233 |                     | 7:00 PM - 8:00 PM  |       | 71            | 299   | 370   |
| 8:00 AM - 9:00 AM      |  | 1,254         | 272   | 1,526 |                     | 8:00 PM - 9:00 PM  |       | 68            | 141   | 209   |
| 9:00 AM - 10:00 AM     |  | 881           | 234   | 1,115 | 9:00 PM - 10:00 PM  |                    | 43    | 82            | 125   |       |
| 10:00 AM - 11:00 AM    |  | 368           | 215   | 583   | 10:00 PM - 11:00 PM |                    | 33    | 52            | 85    |       |
| 11:00 AM - 12:00 PM    |  | 336           | 515   | 851   | 11:00 PM - 12:00 AM |                    | 12    | 42            | 54    |       |
| Total                  |  | 4,639         | 1,765 | 6,404 | Total               |                    | 2,755 | 5,663         | 8,418 |       |

|                |           |               |              |                |           |               |              |
|----------------|-----------|---------------|--------------|----------------|-----------|---------------|--------------|
| <b>24-Hour</b> | <b>NB</b> | <b>Volume</b> | <b>7,394</b> | <b>24-Hour</b> | <b>SB</b> | <b>Volume</b> | <b>7,428</b> |
|----------------|-----------|---------------|--------------|----------------|-----------|---------------|--------------|



# 24 Hour Segment Count

Accurate Video Counts Inc  
info@accuratevideocounts.com  
(619) 987-5136



**Location:** 8. W. Bernardo Dr: between Matinal Rd & W. Rancho Bernardo Dr

**Orientation:** North-South

**Date of Count:** Tuesday, June 09, 2015

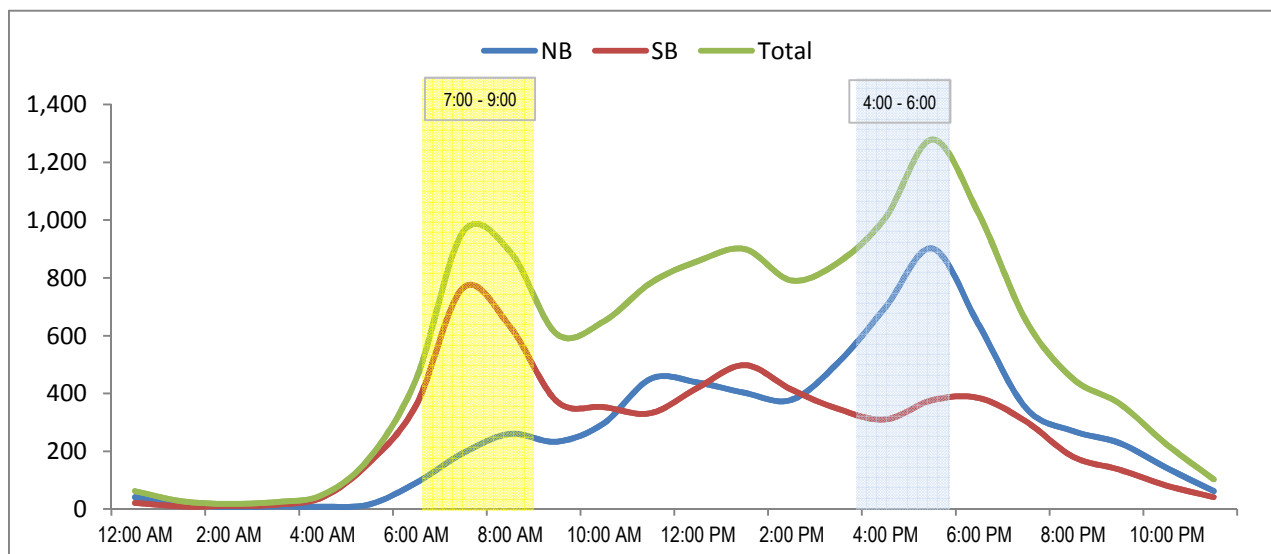
**Analysts:** DASH

**Weather:** Sunny

**AVC Proj. No:** 15-0364

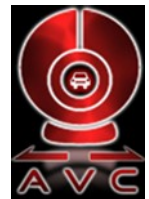
| 24 Hour Segment Volume |  |               |       |       |                     | 13,200             |       |               |       |       |
|------------------------|--|---------------|-------|-------|---------------------|--------------------|-------|---------------|-------|-------|
| Time                   |  | Hourly Volume |       |       |                     | Time               |       | Hourly Volume |       |       |
|                        |  | NB            | SB    | Total |                     |                    |       | NB            | SB    | Total |
| 12:00 AM - 1:00 AM     |  | 41            | 21    | 62    |                     | 12:00 PM - 1:00 PM |       | 438           | 420   | 858   |
| 1:00 AM - 2:00 AM      |  | 18            | 9     | 27    |                     | 1:00 PM - 2:00 PM  |       | 402           | 498   | 900   |
| 2:00 AM - 3:00 AM      |  | 7             | 11    | 18    |                     | 2:00 PM - 3:00 PM  |       | 378           | 413   | 791   |
| 3:00 AM - 4:00 AM      |  | 9             | 15    | 24    |                     | 3:00 PM - 4:00 PM  |       | 508           | 346   | 854   |
| 4:00 AM - 5:00 AM      |  | 8             | 41    | 49    |                     | 4:00 PM - 5:00 PM  |       | 698           | 310   | 1,008 |
| 5:00 AM - 6:00 AM      |  | 16            | 161   | 177   |                     | 5:00 PM - 6:00 PM  |       | 902           | 377   | 1,279 |
| 6:00 AM - 7:00 AM      |  | 91            | 361   | 452   |                     | 6:00 PM - 7:00 PM  |       | 635           | 384   | 1,019 |
| 7:00 AM - 8:00 AM      |  | 194           | 766   | 960   |                     | 7:00 PM - 8:00 PM  |       | 349           | 303   | 652   |
| 8:00 AM - 9:00 AM      |  | 260           | 631   | 891   |                     | 8:00 PM - 9:00 PM  |       | 270           | 181   | 451   |
| 9:00 AM - 10:00 AM     |  | 233           | 372   | 605   | 9:00 PM - 10:00 PM  |                    | 228   | 136           | 364   |       |
| 10:00 AM - 11:00 AM    |  | 297           | 353   | 650   | 10:00 PM - 11:00 PM |                    | 142   | 81            | 223   |       |
| 11:00 AM - 12:00 PM    |  | 451           | 332   | 783   | 11:00 PM - 12:00 AM |                    | 62    | 41            | 103   |       |
| Total                  |  | 1,625         | 3,073 | 4,698 | Total               |                    | 5,012 | 3,490         | 8,502 |       |

|                |           |               |              |                |           |               |              |
|----------------|-----------|---------------|--------------|----------------|-----------|---------------|--------------|
| <b>24-Hour</b> | <b>NB</b> | <b>Volume</b> | <b>6,637</b> | <b>24-Hour</b> | <b>SB</b> | <b>Volume</b> | <b>6,563</b> |
|----------------|-----------|---------------|--------------|----------------|-----------|---------------|--------------|



# 24 Hour Segment Count

Accurate Video Counts Inc  
info@accuratevideocounts.com  
(619) 987-5136



**Location:** 9. Via Del Campo: between Via del Campo Ct & Via Esprillo

**Orientation:** North-South

**Date of Count:** Tuesday, June 09, 2015

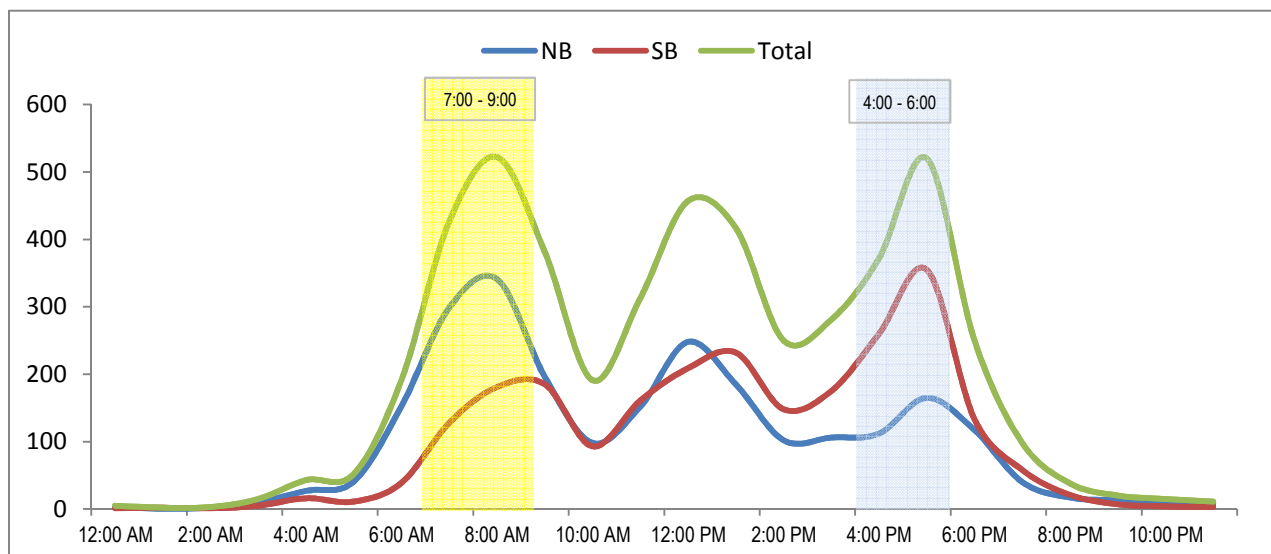
**Analysts:** DASH

**Weather:** Sunny

**AVC Proj. No:** 15-0364

| 24 Hour Segment Volume |  |               |     |       |                     | 4,875              |       |               |       |       |
|------------------------|--|---------------|-----|-------|---------------------|--------------------|-------|---------------|-------|-------|
| Time                   |  | Hourly Volume |     |       |                     | Time               |       | Hourly Volume |       |       |
|                        |  | NB            | SB  | Total |                     |                    |       | NB            | SB    | Total |
| 12:00 AM - 1:00 AM     |  | 4             | 1   | 5     |                     | 12:00 PM - 1:00 PM |       | 248           | 209   | 457   |
| 1:00 AM - 2:00 AM      |  | 0             | 2   | 2     |                     | 1:00 PM - 2:00 PM  |       | 185           | 232   | 417   |
| 2:00 AM - 3:00 AM      |  | 2             | 1   | 3     |                     | 2:00 PM - 3:00 PM  |       | 102           | 148   | 250   |
| 3:00 AM - 4:00 AM      |  | 10            | 5   | 15    |                     | 3:00 PM - 4:00 PM  |       | 106           | 175   | 281   |
| 4:00 AM - 5:00 AM      |  | 27            | 16  | 43    |                     | 4:00 PM - 5:00 PM  |       | 112           | 260   | 372   |
| 5:00 AM - 6:00 AM      |  | 41            | 11  | 52    |                     | 5:00 PM - 6:00 PM  |       | 165           | 355   | 520   |
| 6:00 AM - 7:00 AM      |  | 153           | 39  | 192   |                     | 6:00 PM - 7:00 PM  |       | 117           | 133   | 250   |
| 7:00 AM - 8:00 AM      |  | 299           | 128 | 427   |                     | 7:00 PM - 8:00 PM  |       | 40            | 58    | 98    |
| 8:00 AM - 9:00 AM      |  | 341           | 181 | 522   |                     | 8:00 PM - 9:00 PM  |       | 17            | 21    | 38    |
| 9:00 AM - 10:00 AM     |  | 196           | 185 | 381   | 9:00 PM - 10:00 PM  |                    | 13    | 7             | 20    |       |
| 10:00 AM - 11:00 AM    |  | 98            | 93  | 191   | 10:00 PM - 11:00 PM |                    | 11    | 4             | 15    |       |
| 11:00 AM - 12:00 PM    |  | 152           | 161 | 313   | 11:00 PM - 12:00 AM |                    | 8     | 3             | 11    |       |
| Total                  |  | 1,323         | 823 | 2,146 | Total               |                    | 1,124 | 1,605         | 2,729 |       |

|                |           |               |              |                |           |               |              |
|----------------|-----------|---------------|--------------|----------------|-----------|---------------|--------------|
| <b>24-Hour</b> | <b>NB</b> | <b>Volume</b> | <b>2,447</b> | <b>24-Hour</b> | <b>SB</b> | <b>Volume</b> | <b>2,428</b> |
|----------------|-----------|---------------|--------------|----------------|-----------|---------------|--------------|



2013 Traffic Volumes Book

| Dist | Route | County |   | Postmile | Description                                | Back  | Back   | Back   | Ahead | Ahead  | Ahead  |
|------|-------|--------|---|----------|--------------------------------------------|-------|--------|--------|-------|--------|--------|
|      |       |        |   |          |                                            | Peak  | Peak   |        | Peak  | Peak   |        |
|      |       |        |   |          |                                            | Hour  | Month  | AADT   | Hour  | AADT   | AADT   |
| 11   | 15    | SD     | R | 9.995    | CLAIREMONT MESA BOULEVARD                  | 13100 | 171000 | 169000 | 13200 | 154000 | 151000 |
| 11   | 15    | SD     | R | 10.58    | JCT. RTE. 52                               | 13200 | 154000 | 151000 | 13800 | 180000 | 178000 |
| 11   | 15    | SD     | V | 12.002   | ROUTE 15S HOV LANES                        | 13800 | 180000 | 178000 | 13300 | 173000 | 172000 |
| 11   | 15    | SD     | V | 12.124   | JCT. RTE. 163                              | 13300 | 173000 | 172000 | 25500 | 302000 | 292000 |
| 11   | 15    | SD     | V | 13.334   | SAN DIEGO, MIRAMAR WAY                     | 25500 | 302000 | 292000 | 23700 | 297000 | 289000 |
| 11   | 15    | SD     | V | 14.285   | SAN DIEGO, MIRAMAR/ POMERADO ROADS         | 23700 | 297000 | 289000 | 22200 | 278000 | 272000 |
| 11   | 15    | SD     | V | 15       | CARROLL CANYON ROAD                        | 22200 | 278000 | 272000 | 21900 | 266000 | 258000 |
| 11   | 15    | SD     | V | 15.924   | MIRA MESA BOULEVARD                        | 21900 | 266000 | 258000 | 19600 | 258000 | 249000 |
| 11   | 15    | SD     | V | 17.311   | SAN DIEGO, MERCY ROAD                      | 19600 | 258000 | 249000 | 18800 | 247000 | 236000 |
| 11   | 15    | SD     | V | 18.176   | SAN DIEGO, POWAY ROAD                      | 18800 | 247000 | 236000 | 16900 | 222000 | 207000 |
| 11   | 15    | SD     | V | 19.468   | JCT. RTE. 56                               | 16900 | 222000 | 207000 | 18800 | 237000 | 229000 |
| 11   | 15    | SD     | V | 20.574   | CARMEL MOUNTAIN ROAD                       | 19000 | 240000 | 229000 | 16100 | 227000 | 218000 |
| 11   | 15    | SD     | V | 21.915   | SAN DIEGO, CAMINO DEL NORTE                | 16100 | 227000 | 218000 | 16000 | 227000 | 213000 |
| 11   | 15    | SD     | V | 22.935   | SAN DIEGO, BERNARDO CENTER DRIVE           | 16000 | 227000 | 213000 | 15600 | 219000 | 204000 |
| 11   | 15    | SD     | V | 23.687   | SAN DIEGO, RANCHO BERNARDO ROAD            | 15600 | 219000 | 204000 | 16400 | 207000 | 196000 |
| 11   | 15    | SD     | V | 26.026   | POMERADO ROAD                              | 16400 | 207000 | 196000 | 17600 | 218000 | 202000 |
| 11   | 15    | SD     | V | 26.97    | ESCONDIDO, FELICITA RD, VIA RANCHO PARKWAY | 17600 | 218000 | 202000 | 15400 | 203000 | 194000 |
| 11   | 15    | SD     | V | 27.65    | ESCONDIDO, S JCT. OF CENTRE CITY PARKWAY   | 15400 | 203000 | 194000 | 17300 | 213000 | 206000 |
| 11   | 15    | SD     | R | 28.765   | CITRACADO PARKWAY                          | 17300 | 213000 | 206000 | 17300 | 228000 | 216000 |
| 11   | 15    | SD     | R | 30.09    | ESCONDIDO, 9TH AVENUE                      | 17300 | 228000 | 216000 | 17400 | 211000 | 202000 |
| 11   | 15    | SD     | R | 30.627   | VALLEY PARKWAY                             | 17400 | 211000 | 202000 | 17100 | 218000 | 217000 |
| 11   | 15    | SD     | R | 31.517   | JCT. RTE. 78                               | 17100 | 218000 | 217000 | 11300 | 139000 | 131000 |
| 11   | 15    | SD     | R | 32.861   | ESCONDIDO, EL NORTE PARKWAY                | 11300 | 139000 | 131000 | 8900  | 119000 | 115000 |
| 11   | 15    | SD     | R | 33.922   | CENTRE CITY PARKWAY                        | 8900  | 119000 | 115000 | 9400  | 126000 | 121000 |
| 11   | 15    | SD     | R | 36.636   | DEER SPRINGS ROAD                          | 9400  | 126000 | 121000 | 10700 | 127000 | 122000 |
| 11   | 15    | SD     | R | 40.842   | GOPHER CANYON ROAD                         | 10900 | 127000 | 122000 | 9100  | 124000 | 115000 |
| 11   | 15    | SD     | R | 43.279   | ESCONDIDO HIGHWAY                          | 9100  | 124000 | 115000 | 10300 | 117000 | 117000 |
| 11   | 15    | SD     | R | 46.491   | JCT. RTE. 76                               | 10300 | 117000 | 117000 | 10800 | 130000 | 126000 |
| 11   | 15    | SD     | R | 50.585   | MISSION ROAD                               | 10800 | 130000 | 126000 | 10700 | 142000 | 134000 |
| 11   | 15    | SD     | R | 54.07    | RAINBOW VALLEY BOULEVARD                   | 10700 | 142000 | 134000 | 10800 | 142000 | 133000 |
| 11   | 15    | SD     | R | 54.258   | SAN DIEGO/RIVERSIDE COUNTY LINE            | 10800 | 142000 | 133000 |       |        |        |

## **APPENDIX B**

### **CITY OF SAN DIEGO ROADWAY CLASSIFICATION TABLES**



**TABLE 2**  
**Roadway Classifications, Levels of Service (LOS)**  
**and Average Daily Traffic (ADT)**

| STREET<br>CLASSIFICATION                                 | LANES              | CROSS<br>SECTIONS | LEVEL OF SERVICE |        |         |         |         |
|----------------------------------------------------------|--------------------|-------------------|------------------|--------|---------|---------|---------|
|                                                          |                    |                   | A                | B      | C       | D       | E       |
| Freeway                                                  | 8 lanes            |                   | 60,000           | 84,000 | 120,000 | 140,000 | 150,000 |
| Freeway                                                  | 6 lanes            |                   | 45,000           | 63,000 | 90,000  | 110,000 | 120,000 |
| Freeway                                                  | 4 lanes            |                   | 30,000           | 42,000 | 60,000  | 70,000  | 80,000  |
| Expressway                                               | 6 lanes            | 102/122           | 30,000           | 42,000 | 60,000  | 70,000  | 80,000  |
| Primary Arterial                                         | 6 lanes            | 102/122           | 25,000           | 35,000 | 50,000  | 55,000  | 60,000  |
| Major Arterial                                           | 6 lanes            | 102/122           | 20,000           | 28,000 | 40,000  | 45,000  | 50,000  |
| Major Arterial                                           | 4 lanes            | 78/98             | 15,000           | 21,000 | 30,000  | 35,000  | 40,000  |
| Collector                                                | 4 lanes            | 72/92             | 10,000           | 14,000 | 20,000  | 25,000  | 30,000  |
| Collector (no center lane)<br>continuous left-turn lane) | 4 lanes<br>2 lanes | 64/84<br>50/70    | 5,000            | 7,000  | 10,000  | 13,000  | 15,000  |
| Collector<br>(no fronting property)                      | 2 lanes            | 40/60             | 4,000            | 5,500  | 7,500   | 9,000   | 10,000  |
| Collector<br>(commercial-industrial fronting)            | 2 lanes            | 50/70             | 2,500            | 3,500  | 5,000   | 6,500   | 8,000   |
| Collector<br>(multifamily)                               | 2 lanes            | 40/60             | 2,500            | 3,500  | 5,000   | 6,500   | 8,000   |
| Sub-Collector<br>(single-family)                         | 2 lanes            | 36/56             | —                | —      | 2,200   | —       | —       |

**LEGEND:**

XXX/XXX = Curb to curb width (feet)/right-of-way width (feet): based on the City of San Diego Street Design Manual

XX/XXX= Approximate recommended ADT based on the City of San Diego Street Design Manual.

**NOTES:**

1. The volumes and the average daily level of service listed above are only intended as a general planning guideline.
2. Levels of service are not applied to residential streets since their primary purpose is to serve abutting lots, not carry through traffic. Levels of service normally apply to roads carrying through traffic between major trip generators and attractors.

## **APPENDIX C**

### **PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS EXISTING**

# HCM 2010 Signalized Intersection Summary

## 1: Camino San Bernardo & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 0                                                                                 | 870                                                                               | 171                                                                               | 400                                                                               | 692                                                                               | 1                                                                                 | 37                                                                                 | 0                                                                                   | 173                                                                                 | 4                                                                                   | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 0                                                                                 | 870                                                                               | 171                                                                               | 400                                                                               | 692                                                                               | 1                                                                                 | 37                                                                                 | 0                                                                                   | 173                                                                                 | 4                                                                                   | 0                                                                                   | 0                                                                                   |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.98                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.98                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 946                                                                               | 186                                                                               | 435                                                                               | 752                                                                               | 1                                                                                 | 40                                                                                 | 0                                                                                   | 188                                                                                 | 4                                                                                   | 0                                                                                   | 0                                                                                   |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                  | 2                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 3                                                                                 | 1252                                                                              | 246                                                                               | 558                                                                               | 2391                                                                              | 3                                                                                 | 392                                                                                | 294                                                                                 | 259                                                                                 | 176                                                                                 | 0                                                                                   | 0                                                                                   |
| Arrive On Green              | 0.00                                                                              | 0.43                                                                              | 0.43                                                                              | 0.16                                                                              | 0.66                                                                              | 0.66                                                                              | 0.17                                                                               | 0.00                                                                                | 0.17                                                                                | 0.17                                                                                | 0.00                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 2942                                                                              | 578                                                                               | 3442                                                                              | 3627                                                                              | 5                                                                                 | 1412                                                                               | 1770                                                                                | 1557                                                                                | 371                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Volume(v), veh/h         | 0                                                                                 | 569                                                                               | 563                                                                               | 435                                                                               | 367                                                                               | 386                                                                               | 40                                                                                 | 0                                                                                   | 188                                                                                 | 4                                                                                   | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1750                                                                              | 1721                                                                              | 1770                                                                              | 1862                                                                              | 1412                                                                               | 1770                                                                                | 1557                                                                                | 371                                                                                 | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.0                                                                               | 17.2                                                                              | 17.2                                                                              | 7.6                                                                               | 5.6                                                                               | 5.6                                                                               | 0.0                                                                                | 0.0                                                                                 | 7.2                                                                                 | 0.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 17.2                                                                              | 17.2                                                                              | 7.6                                                                               | 5.6                                                                               | 5.6                                                                               | 1.2                                                                                | 0.0                                                                                 | 7.2                                                                                 | 7.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.33                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.00                                                                                |
| Lane Grp Cap(c), veh/h       | 3                                                                                 | 753                                                                               | 745                                                                               | 558                                                                               | 1167                                                                              | 1228                                                                              | 392                                                                                | 294                                                                                 | 259                                                                                 | 176                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.00                                                                              | 0.75                                                                              | 0.76                                                                              | 0.78                                                                              | 0.31                                                                              | 0.31                                                                              | 0.10                                                                               | 0.00                                                                                | 0.73                                                                                | 0.02                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 141                                                                               | 897                                                                               | 887                                                                               | 736                                                                               | 1167                                                                              | 1228                                                                              | 806                                                                                | 813                                                                                 | 716                                                                                 | 525                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 15.3                                                                              | 15.3                                                                              | 25.3                                                                              | 4.6                                                                               | 4.6                                                                               | 22.4                                                                               | 0.0                                                                                 | 24.9                                                                                | 28.5                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 3.0                                                                               | 3.1                                                                               | 3.9                                                                               | 0.2                                                                               | 0.1                                                                               | 0.1                                                                                | 0.0                                                                                 | 3.8                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 9.0                                                                               | 8.9                                                                               | 3.9                                                                               | 2.7                                                                               | 2.8                                                                               | 0.6                                                                                | 0.0                                                                                 | 3.4                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 18.4                                                                              | 18.5                                                                              | 29.3                                                                              | 4.8                                                                               | 4.8                                                                               | 22.5                                                                               | 0.0                                                                                 | 28.8                                                                                | 28.5                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    |                                                                                   | B                                                                                 | B                                                                                 | C                                                                                 | A                                                                                 | A                                                                                 | C                                                                                  |                                                                                     | C                                                                                   | C                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1132                                                                              |                                                                                   |                                                                                   | 1188                                                                              |                                                                                   |                                                                                    | 228                                                                                 |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 18.4                                                                              |                                                                                   |                                                                                   | 13.7                                                                              |                                                                                   |                                                                                    | 27.7                                                                                |                                                                                     |                                                                                     | 28.5                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 14.7                                                                              | 32.9                                                                              |                                                                                   | 15.5                                                                              | 0.0                                                                               | 47.6                                                                              |                                                                                    | 15.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 6.0                                                                               |                                                                                   | 5.0                                                                               | 4.5                                                                               | 6.0                                                                               |                                                                                    | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 13.5                                                                              | 32.0                                                                              |                                                                                   | 29.0                                                                              | 5.0                                                                               | 40.5                                                                              |                                                                                    | 29.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 9.6                                                                               | 19.2                                                                              |                                                                                   | 9.4                                                                               | 0.0                                                                               | 7.6                                                                               |                                                                                    | 9.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.6                                                                               | 7.6                                                                               |                                                                                   | 1.1                                                                               | 0.0                                                                               | 14.3                                                                              |                                                                                    | 1.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 17.1                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 2: Via Del Campo & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 4                                                                                 | 858                                                                               | 302                                                                               | 596                                                                               | 1208                                                                              | 0                                                                                 | 59                                                                                 | 0                                                                                   | 17                                                                                  | 1                                                                                   | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 4                                                                                 | 858                                                                               | 302                                                                               | 596                                                                               | 1208                                                                              | 0                                                                                 | 59                                                                                 | 0                                                                                   | 17                                                                                  | 1                                                                                   | 0                                                                                   | 0                                                                                   |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.98                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.98                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1900                                                                               | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 4                                                                                 | 964                                                                               | 339                                                                               | 670                                                                               | 1357                                                                              | 0                                                                                 | 66                                                                                 | 0                                                                                   | 19                                                                                  | 1                                                                                   | 0                                                                                   | 0                                                                                   |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 0                                                                                  | 1                                                                                   | 1                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                               | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 7                                                                                 | 1030                                                                              | 359                                                                               | 666                                                                               | 2738                                                                              | 0                                                                                 | 172                                                                                | 0                                                                                   | 92                                                                                  | 107                                                                                 | 0                                                                                   | 0                                                                                   |
| Arrive On Green              | 0.00                                                                              | 0.40                                                                              | 0.40                                                                              | 0.38                                                                              | 0.77                                                                              | 0.00                                                                              | 0.06                                                                               | 0.00                                                                                | 0.06                                                                                | 0.06                                                                                | 0.00                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 2558                                                                              | 893                                                                               | 1774                                                                              | 3632                                                                              | 0                                                                                 | 1635                                                                               | 0                                                                                   | 1558                                                                                | 526                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Volume(v), veh/h         | 4                                                                                 | 665                                                                               | 638                                                                               | 670                                                                               | 1357                                                                              | 0                                                                                 | 66                                                                                 | 0                                                                                   | 19                                                                                  | 1                                                                                   | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1681                                                                              | 1774                                                                              | 1770                                                                              | 0                                                                                 | 1635                                                                               | 0                                                                                   | 1558                                                                                | 526                                                                                 | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.2                                                                               | 34.1                                                                              | 34.7                                                                              | 35.6                                                                              | 13.4                                                                              | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 1.1                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.2                                                                               | 34.1                                                                              | 34.7                                                                              | 35.6                                                                              | 13.4                                                                              | 0.0                                                                               | 3.5                                                                                | 0.0                                                                                 | 1.1                                                                                 | 3.5                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.53                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.00                                                                                |
| Lane Grp Cap(c), veh/h       | 7                                                                                 | 712                                                                               | 677                                                                               | 666                                                                               | 2738                                                                              | 0                                                                                 | 172                                                                                | 0                                                                                   | 92                                                                                  | 107                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.53                                                                              | 0.93                                                                              | 0.94                                                                              | 1.01                                                                              | 0.50                                                                              | 0.00                                                                              | 0.38                                                                               | 0.00                                                                                | 0.21                                                                                | 0.01                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 75                                                                                | 744                                                                               | 707                                                                               | 666                                                                               | 2738                                                                              | 0                                                                                 | 519                                                                                | 0                                                                                   | 476                                                                                 | 454                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 47.1                                                                              | 27.1                                                                              | 27.3                                                                              | 29.6                                                                              | 3.9                                                                               | 0.0                                                                               | 43.7                                                                               | 0.0                                                                                 | 42.5                                                                                | 45.4                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 48.5                                                                              | 18.2                                                                              | 20.7                                                                              | 36.5                                                                              | 0.1                                                                               | 0.0                                                                               | 1.4                                                                                | 0.0                                                                                 | 1.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.2                                                                               | 20.2                                                                              | 19.9                                                                              | 23.9                                                                              | 6.5                                                                               | 0.0                                                                               | 1.8                                                                                | 0.0                                                                                 | 0.5                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 95.6                                                                              | 45.3                                                                              | 48.0                                                                              | 66.2                                                                              | 4.1                                                                               | 0.0                                                                               | 45.1                                                                               | 0.0                                                                                 | 43.6                                                                                | 45.4                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | F                                                                                 | D                                                                                 | D                                                                                 | F                                                                                 | A                                                                                 |                                                                                   | D                                                                                  |                                                                                     | D                                                                                   | D                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1307                                                                              |                                                                                   |                                                                                   | 2027                                                                              |                                                                                   |                                                                                    | 85                                                                                  |                                                                                     |                                                                                     | 1                                                                                   |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 46.8                                                                              |                                                                                   |                                                                                   | 24.6                                                                              |                                                                                   |                                                                                    | 44.7                                                                                |                                                                                     |                                                                                     | 45.4                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 40.0                                                                              | 44.1                                                                              |                                                                                   | 10.8                                                                              | 4.8                                                                               | 79.3                                                                              |                                                                                    | 10.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.4                                                                               | 5.9                                                                               |                                                                                   | * 5.2                                                                             | 4.4                                                                               | * 5.9                                                                             |                                                                                    | 5.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 35.6                                                                              | 39.9                                                                              |                                                                                   | * 29                                                                              | 4.0                                                                               | * 72                                                                              |                                                                                    | 29.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 37.6                                                                              | 36.7                                                                              |                                                                                   | 5.5                                                                               | 2.2                                                                               | 15.4                                                                              |                                                                                    | 5.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 1.5                                                                               |                                                                                   | 0.3                                                                               | 0.0                                                                               | 33.4                                                                              |                                                                                    | 0.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 33.6                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 3: Project Dwy/Matinal Rd & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 33                                                                                | 742                                                                               | 0                                                                                 | 0                                                                                 | 1572                                                                              | 16                                                                                | 0                                                                                  | 0                                                                                   | 0                                                                                   | 82                                                                                  | 0                                                                                   | 141                                                                                 |
| Future Volume (veh/h)        | 33                                                                                | 742                                                                               | 0                                                                                 | 0                                                                                 | 1572                                                                              | 16                                                                                | 0                                                                                  | 0                                                                                   | 0                                                                                   | 82                                                                                  | 0                                                                                   | 141                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.98                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 38                                                                                | 853                                                                               | 0                                                                                 | 0                                                                                 | 1807                                                                              | 18                                                                                | 0                                                                                  | 0                                                                                   | 0                                                                                   | 94                                                                                  | 0                                                                                   | 162                                                                                 |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                  | 1                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.87                                                                              | 0.87                                                                              | 0.87                                                                              | 0.87                                                                              | 0.87                                                                              | 0.87                                                                              | 0.87                                                                               | 0.87                                                                                | 0.87                                                                                | 0.87                                                                                | 0.87                                                                                | 0.87                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 48                                                                                | 2455                                                                              | 0                                                                                 | 2                                                                                 | 2254                                                                              | 22                                                                                | 70                                                                                 | 360                                                                                 | 0                                                                                   | 144                                                                                 | 12                                                                                  | 186                                                                                 |
| Arrive On Green              | 0.03                                                                              | 0.69                                                                              | 0.00                                                                              | 0.00                                                                              | 0.63                                                                              | 0.63                                                                              | 0.00                                                                               | 0.00                                                                                | 0.00                                                                                | 0.19                                                                                | 0.00                                                                                | 0.19                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 3632                                                                              | 0                                                                                 | 1774                                                                              | 3590                                                                              | 36                                                                                | 1219                                                                               | 1863                                                                                | 0                                                                                   | 495                                                                                 | 62                                                                                  | 960                                                                                 |
| Grp Volume(v), veh/h         | 38                                                                                | 853                                                                               | 0                                                                                 | 0                                                                                 | 889                                                                               | 936                                                                               | 0                                                                                  | 0                                                                                   | 0                                                                                   | 256                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 0                                                                                 | 1774                                                                              | 1770                                                                              | 1856                                                                              | 1219                                                                               | 1863                                                                                | 0                                                                                   | 1517                                                                                | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 2.2                                                                               | 10.0                                                                              | 0.0                                                                               | 0.0                                                                               | 38.6                                                                              | 38.8                                                                              | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 14.8                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 2.2                                                                               | 10.0                                                                              | 0.0                                                                               | 0.0                                                                               | 38.6                                                                              | 38.8                                                                              | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 16.8                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                              |                                                                                   | 0.02                                                                              | 1.00                                                                               |                                                                                     | 0.00                                                                                | 0.37                                                                                |                                                                                     | 0.63                                                                                |
| Lane Grp Cap(c), veh/h       | 48                                                                                | 2455                                                                              | 0                                                                                 | 2                                                                                 | 1111                                                                              | 1165                                                                              | 70                                                                                 | 360                                                                                 | 0                                                                                   | 341                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.79                                                                              | 0.35                                                                              | 0.00                                                                              | 0.00                                                                              | 0.80                                                                              | 0.80                                                                              | 0.00                                                                               | 0.00                                                                                | 0.00                                                                                | 0.75                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 69                                                                                | 2471                                                                              | 0                                                                                 | 69                                                                                | 1253                                                                              | 1314                                                                              | 182                                                                                | 532                                                                                 | 0                                                                                   | 471                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                               | 0.00                                                                                | 0.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 49.7                                                                              | 6.3                                                                               | 0.0                                                                               | 0.0                                                                               | 14.3                                                                              | 14.3                                                                              | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 40.1                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 31.7                                                                              | 0.1                                                                               | 0.0                                                                               | 0.0                                                                               | 3.4                                                                               | 3.3                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 4.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 1.5                                                                               | 4.9                                                                               | 0.0                                                                               | 0.0                                                                               | 19.6                                                                              | 20.8                                                                              | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 7.5                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 81.4                                                                              | 6.4                                                                               | 0.0                                                                               | 0.0                                                                               | 17.7                                                                              | 17.7                                                                              | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 44.4                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | F                                                                                 | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 | B                                                                                 |                                                                                    |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 891                                                                               |                                                                                   |                                                                                   | 1825                                                                              |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 256                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 9.6                                                                               |                                                                                   |                                                                                   | 17.7                                                                              |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 44.4                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 0.0                                                                               | 78.2                                                                              |                                                                                   | 24.5                                                                              | 6.8                                                                               | 71.5                                                                              |                                                                                    | 24.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 7.0                                                                               |                                                                                   | 4.6                                                                               | 4.0                                                                               | * 7                                                                               |                                                                                    | * 4.6                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 4.0                                                                               | 71.7                                                                              |                                                                                   | 28.7                                                                              | 4.0                                                                               | * 73                                                                              |                                                                                    | * 29                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 0.0                                                                               | 12.0                                                                              |                                                                                   | 18.8                                                                              | 4.2                                                                               | 40.8                                                                              |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 35.8                                                                              |                                                                                   | 1.1                                                                               | 0.0                                                                               | 23.6                                                                              |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 17.6                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 4: West Bernardo Dr & Rancho Bernardo Rd

3/24/2016

|                              |                                                                                    |                                                                                                                                                                      |  |                                                                                    |                                                                                    |  |                                                                                       |                                                                                      |  |                                                                                      |                                                                                      |  |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                                                                                                                 | EBT                                                                                                                                                                                                                                                   | EBR                                                                               | WBL                                                                                                                                                                 | WBT                                                                                                                                                                 | WBR                                                                               | NBL                                                                                                                                                                     | NBT                                                                                                                                                                     | NBR                                                                                 | SBL                                                                                                                                                                     | SBT                                                                                                                                                                     | SBR                                                                                 |
| Lane Configurations          |   |    |                                                                                   |   |   |  |   |   |  |   |   |                                                                                     |
| Traffic Volume (veh/h)       | 42                                                                                                                                                                  | 609                                                                                                                                                                                                                                                   | 60                                                                                | 499                                                                                                                                                                 | 1457                                                                                                                                                                | 271                                                                               | 105                                                                                                                                                                     | 85                                                                                                                                                                      | 107                                                                                 | 643                                                                                                                                                                     | 309                                                                                                                                                                     | 164                                                                                 |
| Future Volume (veh/h)        | 42                                                                                                                                                                  | 609                                                                                                                                                                                                                                                   | 60                                                                                | 499                                                                                                                                                                 | 1457                                                                                                                                                                | 271                                                                               | 105                                                                                                                                                                     | 85                                                                                                                                                                      | 107                                                                                 | 643                                                                                                                                                                     | 309                                                                                                                                                                     | 164                                                                                 |
| Number                       | 5                                                                                                                                                                   | 2                                                                                                                                                                                                                                                     | 12                                                                                | 1                                                                                                                                                                   | 6                                                                                                                                                                   | 16                                                                                | 3                                                                                                                                                                       | 8                                                                                                                                                                       | 18                                                                                  | 7                                                                                                                                                                       | 4                                                                                                                                                                       | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                                                                                                   | 0                                                                                                                                                                                                                                                     | 0                                                                                 | 0                                                                                                                                                                   | 0                                                                                                                                                                   | 0                                                                                 | 0                                                                                                                                                                       | 0                                                                                                                                                                       | 0                                                                                   | 0                                                                                                                                                                       | 0                                                                                                                                                                       | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                                                                                                                |                                                                                                                                                                                                                                                       | 1.00                                                                              | 1.00                                                                                                                                                                |                                                                                                                                                                     | 0.99                                                                              | 1.00                                                                                                                                                                    |                                                                                                                                                                         | 0.99                                                                                | 1.00                                                                                                                                                                    |                                                                                                                                                                         | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                                                                                                                | 1.00                                                                                                                                                                                                                                                  | 1.00                                                                              | 1.00                                                                                                                                                                | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                                                                                                                    | 1.00                                                                                                                                                                    | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                                                                                                    | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                                                                                                                | 1863                                                                                                                                                                                                                                                  | 1900                                                                              | 1863                                                                                                                                                                | 1863                                                                                                                                                                | 1863                                                                              | 1863                                                                                                                                                                    | 1863                                                                                                                                                                    | 1863                                                                                | 1863                                                                                                                                                                    | 1863                                                                                                                                                                    | 1900                                                                                |
| Adj Flow Rate, veh/h         | 43                                                                                                                                                                  | 628                                                                                                                                                                                                                                                   | 62                                                                                | 514                                                                                                                                                                 | 1502                                                                                                                                                                | 279                                                                               | 108                                                                                                                                                                     | 88                                                                                                                                                                      | 110                                                                                 | 663                                                                                                                                                                     | 319                                                                                                                                                                     | 169                                                                                 |
| Adj No. of Lanes             | 2                                                                                                                                                                   | 3                                                                                                                                                                                                                                                     | 0                                                                                 | 2                                                                                                                                                                   | 2                                                                                                                                                                   | 1                                                                                 | 2                                                                                                                                                                       | 2                                                                                                                                                                       | 1                                                                                   | 2                                                                                                                                                                       | 2                                                                                                                                                                       | 0                                                                                   |
| Peak Hour Factor             | 0.97                                                                                                                                                                | 0.97                                                                                                                                                                                                                                                  | 0.97                                                                              | 0.97                                                                                                                                                                | 0.97                                                                                                                                                                | 0.97                                                                              | 0.97                                                                                                                                                                    | 0.97                                                                                                                                                                    | 0.97                                                                                | 0.97                                                                                                                                                                    | 0.97                                                                                                                                                                    | 0.97                                                                                |
| Percent Heavy Veh, %         | 2                                                                                                                                                                   | 2                                                                                                                                                                                                                                                     | 2                                                                                 | 2                                                                                                                                                                   | 2                                                                                                                                                                   | 2                                                                                 | 2                                                                                                                                                                       | 2                                                                                                                                                                       | 2                                                                                   | 2                                                                                                                                                                       | 2                                                                                                                                                                       | 2                                                                                   |
| Cap, veh/h                   | 94                                                                                                                                                                  | 871                                                                                                                                                                                                                                                   | 85                                                                                | 943                                                                                                                                                                 | 1579                                                                                                                                                                | 697                                                                               | 183                                                                                                                                                                     | 395                                                                                                                                                                     | 608                                                                                 | 766                                                                                                                                                                     | 633                                                                                                                                                                     | 328                                                                                 |
| Arrive On Green              | 0.03                                                                                                                                                                | 0.19                                                                                                                                                                                                                                                  | 0.19                                                                              | 0.27                                                                                                                                                                | 0.45                                                                                                                                                                | 0.45                                                                              | 0.05                                                                                                                                                                    | 0.11                                                                                                                                                                    | 0.11                                                                                | 0.22                                                                                                                                                                    | 0.28                                                                                                                                                                    | 0.28                                                                                |
| Sat Flow, veh/h              | 3442                                                                                                                                                                | 4711                                                                                                                                                                                                                                                  | 461                                                                               | 3442                                                                                                                                                                | 3539                                                                                                                                                                | 1562                                                                              | 3442                                                                                                                                                                    | 3539                                                                                                                                                                    | 1561                                                                                | 3442                                                                                                                                                                    | 2253                                                                                                                                                                    | 1167                                                                                |
| Grp Volume(v), veh/h         | 43                                                                                                                                                                  | 450                                                                                                                                                                                                                                                   | 240                                                                               | 514                                                                                                                                                                 | 1502                                                                                                                                                                | 279                                                                               | 108                                                                                                                                                                     | 88                                                                                                                                                                      | 110                                                                                 | 663                                                                                                                                                                     | 249                                                                                                                                                                     | 239                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                                                                                                                | 1695                                                                                                                                                                                                                                                  | 1781                                                                              | 1721                                                                                                                                                                | 1770                                                                                                                                                                | 1562                                                                              | 1721                                                                                                                                                                    | 1770                                                                                                                                                                    | 1561                                                                                | 1721                                                                                                                                                                    | 1770                                                                                                                                                                    | 1651                                                                                |
| Q Serve(g_s), s              | 1.3                                                                                                                                                                 | 12.9                                                                                                                                                                                                                                                  | 13.1                                                                              | 13.2                                                                                                                                                                | 42.2                                                                                                                                                                | 12.5                                                                              | 3.2                                                                                                                                                                     | 2.3                                                                                                                                                                     | 2.1                                                                                 | 19.2                                                                                                                                                                    | 12.2                                                                                                                                                                    | 12.6                                                                                |
| Cycle Q Clear(g_c), s        | 1.3                                                                                                                                                                 | 12.9                                                                                                                                                                                                                                                  | 13.1                                                                              | 13.2                                                                                                                                                                | 42.2                                                                                                                                                                | 12.5                                                                              | 3.2                                                                                                                                                                     | 2.3                                                                                                                                                                     | 2.1                                                                                 | 19.2                                                                                                                                                                    | 12.2                                                                                                                                                                    | 12.6                                                                                |
| Prop In Lane                 | 1.00                                                                                                                                                                |                                                                                                                                                                                                                                                       | 0.26                                                                              | 1.00                                                                                                                                                                |                                                                                                                                                                     | 1.00                                                                              | 1.00                                                                                                                                                                    |                                                                                                                                                                         | 1.00                                                                                | 1.00                                                                                                                                                                    |                                                                                                                                                                         | 0.71                                                                                |
| Lane Grp Cap(c), veh/h       | 94                                                                                                                                                                  | 627                                                                                                                                                                                                                                                   | 330                                                                               | 943                                                                                                                                                                 | 1579                                                                                                                                                                | 697                                                                               | 183                                                                                                                                                                     | 395                                                                                                                                                                     | 608                                                                                 | 766                                                                                                                                                                     | 497                                                                                                                                                                     | 464                                                                                 |
| V/C Ratio(X)                 | 0.46                                                                                                                                                                | 0.72                                                                                                                                                                                                                                                  | 0.73                                                                              | 0.54                                                                                                                                                                | 0.95                                                                                                                                                                | 0.40                                                                              | 0.59                                                                                                                                                                    | 0.22                                                                                                                                                                    | 0.18                                                                                | 0.87                                                                                                                                                                    | 0.50                                                                                                                                                                    | 0.52                                                                                |
| Avail Cap(c_a), veh/h        | 133                                                                                                                                                                 | 1006                                                                                                                                                                                                                                                  | 529                                                                               | 943                                                                                                                                                                 | 1605                                                                                                                                                                | 708                                                                               | 1135                                                                                                                                                                    | 1338                                                                                                                                                                    | 1024                                                                                | 1002                                                                                                                                                                    | 601                                                                                                                                                                     | 560                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                                                                                                                | 1.00                                                                                                                                                                                                                                                  | 1.00                                                                              | 1.00                                                                                                                                                                | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                                                                                                                    | 1.00                                                                                                                                                                    | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                                                                                                    | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                                                                                                                | 1.00                                                                                                                                                                                                                                                  | 1.00                                                                              | 1.00                                                                                                                                                                | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                                                                                                                    | 1.00                                                                                                                                                                    | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                                                                                                    | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 49.5                                                                                                                                                                | 39.6                                                                                                                                                                                                                                                  | 39.7                                                                              | 32.0                                                                                                                                                                | 27.6                                                                                                                                                                | 19.3                                                                              | 47.9                                                                                                                                                                    | 41.9                                                                                                                                                                    | 7.2                                                                                 | 38.7                                                                                                                                                                    | 31.1                                                                                                                                                                    | 31.3                                                                                |
| Incr Delay (d2), s/veh       | 3.4                                                                                                                                                                 | 1.6                                                                                                                                                                                                                                                   | 3.1                                                                               | 0.7                                                                                                                                                                 | 12.7                                                                                                                                                                | 0.4                                                                               | 3.0                                                                                                                                                                     | 0.3                                                                                                                                                                     | 0.1                                                                                 | 6.4                                                                                                                                                                     | 0.8                                                                                                                                                                     | 0.9                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                                                                                                                 | 0.0                                                                                                                                                                                                                                                   | 0.0                                                                               | 0.0                                                                                                                                                                 | 0.0                                                                                                                                                                 | 0.0                                                                               | 0.0                                                                                                                                                                     | 0.0                                                                                                                                                                     | 0.0                                                                                 | 0.0                                                                                                                                                                     | 0.0                                                                                                                                                                     | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.6                                                                                                                                                                 | 6.2                                                                                                                                                                                                                                                   | 6.7                                                                               | 6.4                                                                                                                                                                 | 23.2                                                                                                                                                                | 5.4                                                                               | 1.6                                                                                                                                                                     | 1.2                                                                                                                                                                     | 1.2                                                                                 | 9.8                                                                                                                                                                     | 6.1                                                                                                                                                                     | 5.8                                                                                 |
| LnGrp Delay(d),s/veh         | 52.9                                                                                                                                                                | 41.2                                                                                                                                                                                                                                                  | 42.7                                                                              | 32.7                                                                                                                                                                | 40.2                                                                                                                                                                | 19.7                                                                              | 50.9                                                                                                                                                                    | 42.1                                                                                                                                                                    | 7.3                                                                                 | 45.2                                                                                                                                                                    | 31.9                                                                                                                                                                    | 32.2                                                                                |
| LnGrp LOS                    | D                                                                                                                                                                   | D                                                                                                                                                                                                                                                     | D                                                                                 | C                                                                                                                                                                   | D                                                                                                                                                                   | B                                                                                 | D                                                                                                                                                                       | D                                                                                                                                                                       | A                                                                                   | D                                                                                                                                                                       | C                                                                                                                                                                       | C                                                                                   |
| Approach Vol, veh/h          |                                                                                                                                                                     | 733                                                                                                                                                                                                                                                   |                                                                                   |                                                                                                                                                                     | 2295                                                                                                                                                                |                                                                                   |                                                                                                                                                                         | 306                                                                                                                                                                     |                                                                                     |                                                                                                                                                                         | 1151                                                                                                                                                                    |                                                                                     |
| Approach Delay, s/veh        |                                                                                                                                                                     | 42.4                                                                                                                                                                                                                                                  |                                                                                   |                                                                                                                                                                     | 36.1                                                                                                                                                                |                                                                                   |                                                                                                                                                                         | 32.7                                                                                                                                                                    |                                                                                     |                                                                                                                                                                         | 39.6                                                                                                                                                                    |                                                                                     |
| Approach LOS                 |                                                                                                                                                                     | D                                                                                                                                                                                                                                                     |                                                                                   |                                                                                                                                                                     | D                                                                                                                                                                   |                                                                                   |                                                                                                                                                                         | C                                                                                                                                                                       |                                                                                     |                                                                                                                                                                         | D                                                                                                                                                                       |                                                                                     |
| Timer                        | 1                                                                                                                                                                   | 2                                                                                                                                                                                                                                                     | 3                                                                                 | 4                                                                                                                                                                   | 5                                                                                                                                                                   | 6                                                                                 | 7                                                                                                                                                                       | 8                                                                                                                                                                       |                                                                                     |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |
| Assigned Phs                 | 1                                                                                                                                                                   | 2                                                                                                                                                                                                                                                     | 3                                                                                 | 4                                                                                                                                                                   | 5                                                                                                                                                                   | 6                                                                                 | 7                                                                                                                                                                       | 8                                                                                                                                                                       |                                                                                     |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 34.0                                                                                                                                                                | 25.0                                                                                                                                                                                                                                                  | 9.9                                                                               | 34.4                                                                                                                                                                | 7.2                                                                                                                                                                 | 51.8                                                                              | 27.4                                                                                                                                                                    | 16.9                                                                                                                                                                    |                                                                                     |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |
| Change Period (Y+Rc), s      | 5.7                                                                                                                                                                 | * 5.9                                                                                                                                                                                                                                                 | 4.4                                                                               | 5.4                                                                                                                                                                 | 4.4                                                                                                                                                                 | 5.7                                                                               | 4.4                                                                                                                                                                     | 5.4                                                                                                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |
| Max Green Setting (Gmax), s  | 20.0                                                                                                                                                                | * 31                                                                                                                                                                                                                                                  | 34.1                                                                              | 35.1                                                                                                                                                                | 4.0                                                                                                                                                                 | 46.9                                                                              | 30.1                                                                                                                                                                    | 39.1                                                                                                                                                                    |                                                                                     |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 15.2                                                                                                                                                                | 15.1                                                                                                                                                                                                                                                  | 5.2                                                                               | 14.6                                                                                                                                                                | 3.3                                                                                                                                                                 | 44.2                                                                              | 21.2                                                                                                                                                                    | 4.3                                                                                                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |
| Green Ext Time (p_c), s      | 4.2                                                                                                                                                                 | 4.0                                                                                                                                                                                                                                                   | 0.3                                                                               | 4.0                                                                                                                                                                 | 0.0                                                                                                                                                                 | 1.9                                                                               | 1.8                                                                                                                                                                     | 4.4                                                                                                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |
| Intersection Summary         |                                                                                                                                                                     |                                                                                                                                                                                                                                                       |                                                                                   |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                   |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                                                                                                     |                                                                                                                                                                                                                                                       |                                                                                   | 37.8                                                                                                                                                                |                                                                                                                                                                     |                                                                                   |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |
| HCM 2010 LOS                 |                                                                                                                                                                     |                                                                                                                                                                                                                                                       |                                                                                   | D                                                                                                                                                                   |                                                                                                                                                                     |                                                                                   |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |
| Notes                        |                                                                                                                                                                     |                                                                                                                                                                                                                                                       |                                                                                   |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                   |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 5: I-15 SB Ramps & Rancho Bernardo Rd

3/24/2016

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|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |                                                                                   |  |  |                                                                                    |                                                                                     |                                                                                     |  |                                                                                     |  |
| Traffic Volume (veh/h)       | 0                                                                                 | 744                                                                               | 555                                                                               | 0                                                                                 | 1182                                                                              | 505                                                                               | 0                                                                                  | 0                                                                                   | 0                                                                                   | 659                                                                                 | 0                                                                                   | 1086                                                                                |
| Future Volume (veh/h)        | 0                                                                                 | 744                                                                               | 555                                                                               | 0                                                                                 | 1182                                                                              | 505                                                                               | 0                                                                                  | 0                                                                                   | 0                                                                                   | 659                                                                                 | 0                                                                                   | 1086                                                                                |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                |                                                                                    |                                                                                     |                                                                                     | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 0                                                                                 | 1863                                                                              | 1863                                                                              | 0                                                                                 | 1863                                                                              | 1863                                                                              |                                                                                    |                                                                                     |                                                                                     | 1863                                                                                | 0                                                                                   | 1863                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 764                                                                               | 596                                                                               | 0                                                                                 | 1244                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 694                                                                                 | 0                                                                                   | 1143                                                                                |
| Adj No. of Lanes             | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 3                                                                                 | 1                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 2                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.95                                                                              | 0.95                                                                              | 0.92                                                                              | 0.95                                                                              | 0.95                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.95                                                                                | 0.92                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %         | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 0                                                                                 | 1710                                                                              | 1453                                                                              | 0                                                                                 | 2565                                                                              | 727                                                                               |                                                                                    |                                                                                     |                                                                                     | 1555                                                                                | 0                                                                                   | 1259                                                                                |
| Arrive On Green              | 0.00                                                                              | 0.46                                                                              | 0.46                                                                              | 0.00                                                                              | 0.61                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.45                                                                                | 0.00                                                                                | 0.45                                                                                |
| Sat Flow, veh/h              | 0                                                                                 | 3725                                                                              | 3167                                                                              | 0                                                                                 | 5588                                                                              | 1583                                                                              |                                                                                    |                                                                                     |                                                                                     | 3442                                                                                | 0                                                                                   | 2787                                                                                |
| Grp Volume(v), veh/h         | 0                                                                                 | 764                                                                               | 596                                                                               | 0                                                                                 | 1244                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 694                                                                                 | 0                                                                                   | 1143                                                                                |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1863                                                                              | 1583                                                                              | 0                                                                                 | 1863                                                                              | 1583                                                                              |                                                                                    |                                                                                     |                                                                                     | 1721                                                                                | 0                                                                                   | 1393                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 19.5                                                                              | 17.6                                                                              | 0.0                                                                               | 17.2                                                                              | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 19.4                                                                                | 0.0                                                                                 | 53.4                                                                                |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 19.5                                                                              | 17.6                                                                              | 0.0                                                                               | 17.2                                                                              | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 19.4                                                                                | 0.0                                                                                 | 53.4                                                                                |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 1.00                                                                              | 0.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 1710                                                                              | 1453                                                                              | 0                                                                                 | 2565                                                                              | 727                                                                               |                                                                                    |                                                                                     |                                                                                     | 1555                                                                                | 0                                                                                   | 1259                                                                                |
| V/C Ratio(X)                 | 0.00                                                                              | 0.45                                                                              | 0.41                                                                              | 0.00                                                                              | 0.49                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.45                                                                                | 0.00                                                                                | 0.91                                                                                |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 1710                                                                              | 1453                                                                              | 0                                                                                 | 2565                                                                              | 727                                                                               |                                                                                    |                                                                                     |                                                                                     | 1768                                                                                | 0                                                                                   | 1431                                                                                |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.33                                                                              | 1.33                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.00                                                                              | 0.68                                                                              | 0.68                                                                              | 0.00                                                                              | 0.86                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 25.8                                                                              | 25.2                                                                              | 0.0                                                                               | 18.1                                                                              | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 26.4                                                                                | 0.0                                                                                 | 35.7                                                                                |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.6                                                                               | 0.6                                                                               | 0.0                                                                               | 0.6                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.2                                                                                 | 0.0                                                                                 | 8.1                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 10.2                                                                              | 7.8                                                                               | 0.0                                                                               | 8.9                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 9.2                                                                                 | 0.0                                                                                 | 21.9                                                                                |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 26.3                                                                              | 25.8                                                                              | 0.0                                                                               | 18.7                                                                              | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 26.6                                                                                | 0.0                                                                                 | 43.8                                                                                |
| LnGrp LOS                    |                                                                                   | C                                                                                 | C                                                                                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     | C                                                                                   |                                                                                     | D                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 1360                                                                              |                                                                                   |                                                                                   | 1244                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 1837                                                                                |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 26.1                                                                              |                                                                                   |                                                                                   | 18.7                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 37.3                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 70.7                                                                              |                                                                                   | 69.3                                                                              |                                                                                   | 70.7                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 6.4                                                                               |                                                                                   | 6.1                                                                               |                                                                                   | 6.4                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 55.6                                                                              |                                                                                   | 71.9                                                                              |                                                                                   | 55.6                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 21.5                                                                              |                                                                                   | 55.4                                                                              |                                                                                   | 19.2                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 22.7                                                                              |                                                                                   | 7.9                                                                               |                                                                                   | 23.7                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 28.6                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# HCM 2010 Signalized Intersection Summary

## 6: I-15 NB Ramps & Rancho Bernardo Rd

3/24/2016

|                              |  |       |      |      |      |       |      |      |      |     |     |     |
|------------------------------|------------------------------------------------------------------------------------|-------|------|------|------|-------|------|------|------|-----|-----|-----|
| Movement                     | EBL                                                                                | EBT   | EBR  | WBL  | WBT  | WBR   | NBL  | NBT  | NBR  | SBL | SBT | SBR |
| Lane Configurations          |                                                                                    | ↑↑↑   | ↑    |      | ↑↑↑  | ↑     | ↑↑   |      | ↑↑   |     |     |     |
| Traffic Volume (veh/h)       | 0                                                                                  | 824   | 579  | 0    | 1071 | 285   | 616  | 0    | 433  | 0   | 0   | 0   |
| Future Volume (veh/h)        | 0                                                                                  | 824   | 579  | 0    | 1071 | 285   | 616  | 0    | 433  | 0   | 0   | 0   |
| Number                       | 5                                                                                  | 2     | 12   | 1    | 6    | 16    | 3    | 8    | 18   |     |     |     |
| Initial Q (Qb), veh          | 0                                                                                  | 0     | 0    | 0    | 0    | 0     | 0    | 0    | 0    |     |     |     |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                               |       | 1.00 | 1.00 |      | 1.00  | 1.00 |      | 1.00 |     |     |     |
| Parking Bus, Adj             | 1.00                                                                               | 1.00  | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 |     |     |     |
| Adj Sat Flow, veh/h/ln       | 0                                                                                  | 1863  | 1863 | 0    | 1863 | 1863  | 1863 | 0    | 1863 |     |     |     |
| Adj Flow Rate, veh/h         | 0                                                                                  | 877   | 0    | 0    | 1139 | 303   | 655  | 0    | 461  |     |     |     |
| Adj No. of Lanes             | 0                                                                                  | 3     | 1    | 0    | 3    | 1     | 2    | 0    | 2    |     |     |     |
| Peak Hour Factor             | 0.92                                                                               | 0.94  | 0.94 | 0.92 | 0.94 | 0.94  | 0.94 | 0.92 | 0.94 |     |     |     |
| Percent Heavy Veh, %         | 0                                                                                  | 2     | 2    | 0    | 2    | 2     | 2    | 0    | 2    |     |     |     |
| Cap, veh/h                   | 0                                                                                  | 3804  | 1078 | 0    | 3461 | 1078  | 792  | 0    | 641  |     |     |     |
| Arrive On Green              | 0.00                                                                               | 1.00  | 0.00 | 0.00 | 0.68 | 0.68  | 0.23 | 0.00 | 0.23 |     |     |     |
| Sat Flow, veh/h              | 0                                                                                  | 5588  | 1583 | 0    | 5253 | 1583  | 3442 | 0    | 2787 |     |     |     |
| Grp Volume(v), veh/h         | 0                                                                                  | 877   | 0    | 0    | 1139 | 303   | 655  | 0    | 461  |     |     |     |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                  | 1863  | 1583 | 0    | 1695 | 1583  | 1721 | 0    | 1393 |     |     |     |
| Q Serve(g_s), s              | 0.0                                                                                | 0.0   | 0.0  | 0.0  | 12.9 | 10.6  | 25.3 | 0.0  | 21.4 |     |     |     |
| Cycle Q Clear(g_c), s        | 0.0                                                                                | 0.0   | 0.0  | 0.0  | 12.9 | 10.6  | 25.3 | 0.0  | 21.4 |     |     |     |
| Prop In Lane                 | 0.00                                                                               |       | 1.00 | 0.00 |      | 1.00  | 1.00 |      | 1.00 |     |     |     |
| Lane Grp Cap(c), veh/h       | 0                                                                                  | 3804  | 1078 | 0    | 3461 | 1078  | 792  | 0    | 641  |     |     |     |
| V/C Ratio(X)                 | 0.00                                                                               | 0.23  | 0.00 | 0.00 | 0.33 | 0.28  | 0.83 | 0.00 | 0.72 |     |     |     |
| Avail Cap(c_a), veh/h        | 0                                                                                  | 3804  | 1078 | 0    | 3461 | 1078  | 1399 | 0    | 1133 |     |     |     |
| HCM Platoon Ratio            | 1.00                                                                               | 2.00  | 2.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 |     |     |     |
| Upstream Filter(I)           | 0.00                                                                               | 0.87  | 0.00 | 0.00 | 1.00 | 1.00  | 1.00 | 0.00 | 1.00 |     |     |     |
| Uniform Delay (d), s/veh     | 0.0                                                                                | 0.0   | 0.0  | 0.0  | 9.2  | 8.8   | 51.3 | 0.0  | 49.7 |     |     |     |
| Incr Delay (d2), s/veh       | 0.0                                                                                | 0.1   | 0.0  | 0.0  | 0.3  | 0.7   | 2.3  | 0.0  | 1.5  |     |     |     |
| Initial Q Delay(d3),s/veh    | 0.0                                                                                | 0.0   | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  |     |     |     |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                                | 0.0   | 0.0  | 0.0  | 6.1  | 4.8   | 12.3 | 0.0  | 8.3  |     |     |     |
| LnGrp Delay(d),s/veh         | 0.0                                                                                | 0.1   | 0.0  | 0.0  | 9.5  | 9.5   | 53.5 | 0.0  | 51.3 |     |     |     |
| LnGrp LOS                    |                                                                                    | A     |      |      | A    | A     | D    |      | D    |     |     |     |
| Approach Vol, veh/h          |                                                                                    | 877   |      |      | 1442 |       |      | 1116 |      |     |     |     |
| Approach Delay, s/veh        |                                                                                    | 0.1   |      |      | 9.5  |       |      | 52.6 |      |     |     |     |
| Approach LOS                 |                                                                                    | A     |      |      | A    |       |      | D    |      |     |     |     |
| Timer                        | 1                                                                                  | 2     | 3    | 4    | 5    | 6     | 7    | 8    |      |     |     |     |
| Assigned Phs                 |                                                                                    | 2     |      |      |      | 6     |      | 8    |      |     |     |     |
| Phs Duration (G+Y+Rc), s     |                                                                                    | 101.7 |      |      |      | 101.7 |      | 38.3 |      |     |     |     |
| Change Period (Y+Rc), s      |                                                                                    | 6.4   |      |      |      | 6.4   |      | 6.1  |      |     |     |     |
| Max Green Setting (Gmax), s  |                                                                                    | 70.6  |      |      |      | 70.6  |      | 56.9 |      |     |     |     |
| Max Q Clear Time (g_c+I1), s |                                                                                    | 2.0   |      |      |      | 14.9  |      | 27.3 |      |     |     |     |
| Green Ext Time (p_c), s      |                                                                                    | 28.3  |      |      |      | 26.2  |      | 4.9  |      |     |     |     |
| <b>Intersection Summary</b>  |                                                                                    |       |      |      |      |       |      |      |      |     |     |     |
| HCM 2010 Ctrl Delay          |                                                                                    |       | 21.1 |      |      |       |      |      |      |     |     |     |
| HCM 2010 LOS                 |                                                                                    |       | C    |      |      |       |      |      |      |     |     |     |
| <b>Notes</b>                 |                                                                                    |       |      |      |      |       |      |      |      |     |     |     |

# HCM 2010 Signalized Intersection Summary

## 7: Bernardo Center Dr & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|--|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |  |  |  |  |
| Lane Configurations          |  |  |  |  |  |                                                                                   |   |  |                                                                                     |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 319                                                                               | 582                                                                               | 299                                                                               | 163                                                                               | 804                                                                               | 85                                                                                | 256                                                                                | 188                                                                                 | 109                                                                                 | 185                                                                                 | 247                                                                                 | 108                                                                                 |  |  |  |  |
| Future Volume (veh/h)        | 319                                                                               | 582                                                                               | 299                                                                               | 163                                                                               | 804                                                                               | 85                                                                                | 256                                                                                | 188                                                                                 | 109                                                                                 | 185                                                                                 | 247                                                                                 | 108                                                                                 |  |  |  |  |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |  |  |  |  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |  |  |  |  |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.98                                                                              | 1.00                                                                               |                                                                                     | 0.99                                                                                | 1.00                                                                                |                                                                                     | 0.99                                                                                |  |  |  |  |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |  |  |  |  |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |  |  |  |  |
| Adj Flow Rate, veh/h         | 343                                                                               | 635                                                                               | 316                                                                               | 175                                                                               | 865                                                                               | 91                                                                                | 275                                                                                | 202                                                                                 | 117                                                                                 | 199                                                                                 | 266                                                                                 | 116                                                                                 |  |  |  |  |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 | 1                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                  | 2                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   | 1                                                                                   |  |  |  |  |
| Peak Hour Factor             | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                               | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |  |  |  |  |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |  |  |  |  |
| Cap, veh/h                   | 436                                                                               | 1540                                                                              | 654                                                                               | 257                                                                               | 1178                                                                              | 124                                                                               | 357                                                                                | 397                                                                                 | 220                                                                                 | 284                                                                                 | 566                                                                                 | 444                                                                                 |  |  |  |  |
| Arrive On Green              | 0.12                                                                              | 0.41                                                                              | 0.41                                                                              | 0.07                                                                              | 0.37                                                                              | 0.37                                                                              | 0.10                                                                               | 0.18                                                                                | 0.18                                                                                | 0.08                                                                                | 0.16                                                                                | 0.16                                                                                |  |  |  |  |
| Sat Flow, veh/h              | 3548                                                                              | 3725                                                                              | 1583                                                                              | 3442                                                                              | 3227                                                                              | 339                                                                               | 3442                                                                               | 2193                                                                                | 1214                                                                                | 3442                                                                                | 3539                                                                                | 1560                                                                                |  |  |  |  |
| Grp Volume(v), veh/h         | 343                                                                               | 635                                                                               | 316                                                                               | 175                                                                               | 474                                                                               | 482                                                                               | 275                                                                                | 161                                                                                 | 158                                                                                 | 199                                                                                 | 266                                                                                 | 116                                                                                 |  |  |  |  |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1721                                                                              | 1770                                                                              | 1797                                                                              | 1721                                                                               | 1770                                                                                | 1637                                                                                | 1721                                                                                | 1770                                                                                | 1560                                                                                |  |  |  |  |
| Q Serve(g_s), s              | 7.9                                                                               | 10.1                                                                              | 12.3                                                                              | 4.2                                                                               | 19.6                                                                              | 19.6                                                                              | 6.6                                                                                | 6.9                                                                                 | 7.4                                                                                 | 4.7                                                                                 | 5.7                                                                                 | 4.8                                                                                 |  |  |  |  |
| Cycle Q Clear(g_c), s        | 7.9                                                                               | 10.1                                                                              | 12.3                                                                              | 4.2                                                                               | 19.6                                                                              | 19.6                                                                              | 6.6                                                                                | 6.9                                                                                 | 7.4                                                                                 | 4.7                                                                                 | 5.7                                                                                 | 4.8                                                                                 |  |  |  |  |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.19                                                                              | 1.00                                                                               |                                                                                     | 0.74                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |  |  |  |  |
| Lane Grp Cap(c), veh/h       | 436                                                                               | 1540                                                                              | 654                                                                               | 257                                                                               | 646                                                                               | 656                                                                               | 357                                                                                | 321                                                                                 | 296                                                                                 | 284                                                                                 | 566                                                                                 | 444                                                                                 |  |  |  |  |
| V/C Ratio(X)                 | 0.79                                                                              | 0.41                                                                              | 0.48                                                                              | 0.68                                                                              | 0.73                                                                              | 0.73                                                                              | 0.77                                                                               | 0.50                                                                                | 0.53                                                                                | 0.70                                                                                | 0.47                                                                                | 0.26                                                                                |  |  |  |  |
| Avail Cap(c_a), veh/h        | 573                                                                               | 1655                                                                              | 703                                                                               | 454                                                                               | 753                                                                               | 764                                                                               | 433                                                                                | 818                                                                                 | 756                                                                                 | 503                                                                                 | 1682                                                                                | 936                                                                                 |  |  |  |  |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |  |  |  |  |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |  |  |  |  |
| Uniform Delay (d), s/veh     | 35.9                                                                              | 17.5                                                                              | 18.1                                                                              | 38.0                                                                              | 23.2                                                                              | 23.2                                                                              | 36.7                                                                               | 31.1                                                                                | 31.2                                                                                | 37.6                                                                                | 32.1                                                                                | 23.4                                                                                |  |  |  |  |
| Incr Delay (d2), s/veh       | 5.4                                                                               | 0.2                                                                               | 0.6                                                                               | 3.2                                                                               | 3.1                                                                               | 3.1                                                                               | 6.8                                                                                | 1.2                                                                                 | 1.5                                                                                 | 3.1                                                                                 | 0.6                                                                                 | 0.3                                                                                 |  |  |  |  |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |  |  |  |  |
| %ile BackOfQ(50%),veh/ln     | 4.2                                                                               | 5.2                                                                               | 5.5                                                                               | 2.1                                                                               | 10.1                                                                              | 10.2                                                                              | 3.4                                                                                | 3.5                                                                                 | 3.5                                                                                 | 2.4                                                                                 | 2.9                                                                                 | 2.1                                                                                 |  |  |  |  |
| LnGrp Delay(d),s/veh         | 41.2                                                                              | 17.6                                                                              | 18.7                                                                              | 41.1                                                                              | 26.3                                                                              | 26.3                                                                              | 43.5                                                                               | 32.3                                                                                | 32.7                                                                                | 40.7                                                                                | 32.7                                                                                | 23.7                                                                                |  |  |  |  |
| LnGrp LOS                    | D                                                                                 | B                                                                                 | B                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                  | C                                                                                   | C                                                                                   | D                                                                                   | C                                                                                   | C                                                                                   |  |  |  |  |
| Approach Vol, veh/h          | 1294                                                                              |                                                                                   |                                                                                   |                                                                                   | 1131                                                                              |                                                                                   |                                                                                    |                                                                                     | 594                                                                                 |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Approach Delay, s/veh        | 24.1                                                                              |                                                                                   |                                                                                   |                                                                                   | 28.6                                                                              |                                                                                   |                                                                                    |                                                                                     | 37.6                                                                                |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Phs Duration (G+Y+Rc), s     | 10.7                                                                              | 41.0                                                                              | 13.1                                                                              | 19.4                                                                              | 14.7                                                                              | 36.9                                                                              | 11.4                                                                               | 21.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Change Period (Y+Rc), s      | 4.4                                                                               | 6.2                                                                               | 4.4                                                                               | 5.9                                                                               | 4.4                                                                               | * 6.2                                                                             | 4.4                                                                                | * 5.9                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Max Green Setting (Gmax), s  | 11.1                                                                              | 37.4                                                                              | 10.6                                                                              | 40.0                                                                              | 13.6                                                                              | * 36                                                                              | 12.3                                                                               | * 39                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Max Q Clear Time (g_c+I1), s | 6.2                                                                               | 14.3                                                                              | 8.6                                                                               | 7.7                                                                               | 9.9                                                                               | 21.6                                                                              | 6.7                                                                                | 9.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Green Ext Time (p_c), s      | 0.2                                                                               | 12.3                                                                              | 0.2                                                                               | 4.1                                                                               | 0.4                                                                               | 9.1                                                                               | 0.3                                                                                | 4.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| HCM 2010 Ctrl Delay          | 29.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| HCM 2010 LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |

# HCM 2010 Signalized Intersection Summary

## 8: West Bernardo Dr & Duenda Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |                                                                                     |  |  |                                                                                     |
| Traffic Volume (veh/h)       | 20                                                                                | 170                                                                               | 148                                                                               | 102                                                                               | 51                                                                                | 40                                                                                | 30                                                                                  | 100                                                                                 | 74                                                                                  | 97                                                                                  | 218                                                                                 | 10                                                                                  |
| Future Volume (veh/h)        | 20                                                                                | 170                                                                               | 148                                                                               | 102                                                                               | 51                                                                                | 40                                                                                | 30                                                                                  | 100                                                                                 | 74                                                                                  | 97                                                                                  | 218                                                                                 | 10                                                                                  |
| Number                       | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 22                                                                                | 185                                                                               | 161                                                                               | 111                                                                               | 55                                                                                | 43                                                                                | 33                                                                                  | 109                                                                                 | 80                                                                                  | 105                                                                                 | 237                                                                                 | 11                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                   | 2                                                                                   | 0                                                                                   | 1                                                                                   | 2                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 468                                                                               | 241                                                                               | 210                                                                               | 187                                                                               | 197                                                                               | 167                                                                               | 53                                                                                  | 278                                                                                 | 189                                                                                 | 136                                                                                 | 636                                                                                 | 29                                                                                  |
| Arrive On Green              | 0.26                                                                              | 0.26                                                                              | 0.26                                                                              | 0.11                                                                              | 0.11                                                                              | 0.11                                                                              | 0.03                                                                                | 0.14                                                                                | 0.14                                                                                | 0.08                                                                                | 0.18                                                                                | 0.18                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 913                                                                               | 795                                                                               | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                                | 2018                                                                                | 1372                                                                                | 1774                                                                                | 3445                                                                                | 159                                                                                 |
| Grp Volume(v), veh/h         | 22                                                                                | 0                                                                                 | 346                                                                               | 111                                                                               | 55                                                                                | 43                                                                                | 33                                                                                  | 94                                                                                  | 95                                                                                  | 105                                                                                 | 121                                                                                 | 127                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 0                                                                                 | 1708                                                                              | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                                | 1770                                                                                | 1621                                                                                | 1774                                                                                | 1770                                                                                | 1835                                                                                |
| Q Serve(g_s), s              | 0.4                                                                               | 0.0                                                                               | 9.0                                                                               | 2.9                                                                               | 1.3                                                                               | 1.2                                                                               | 0.9                                                                                 | 2.3                                                                                 | 2.6                                                                                 | 2.8                                                                                 | 2.9                                                                                 | 2.9                                                                                 |
| Cycle Q Clear(g_c), s        | 0.4                                                                               | 0.0                                                                               | 9.0                                                                               | 2.9                                                                               | 1.3                                                                               | 1.2                                                                               | 0.9                                                                                 | 2.3                                                                                 | 2.6                                                                                 | 2.8                                                                                 | 2.9                                                                                 | 2.9                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.47                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 0.85                                                                                | 1.00                                                                                |                                                                                     | 0.09                                                                                |
| Lane Grp Cap(c), veh/h       | 468                                                                               | 0                                                                                 | 451                                                                               | 187                                                                               | 197                                                                               | 167                                                                               | 53                                                                                  | 244                                                                                 | 223                                                                                 | 136                                                                                 | 327                                                                                 | 339                                                                                 |
| V/C Ratio(X)                 | 0.05                                                                              | 0.00                                                                              | 0.77                                                                              | 0.59                                                                              | 0.28                                                                              | 0.26                                                                              | 0.63                                                                                | 0.39                                                                                | 0.42                                                                                | 0.77                                                                                | 0.37                                                                                | 0.37                                                                                |
| Avail Cap(c_a), veh/h        | 813                                                                               | 0                                                                                 | 783                                                                               | 665                                                                               | 698                                                                               | 594                                                                               | 185                                                                                 | 737                                                                                 | 675                                                                                 | 369                                                                                 | 921                                                                                 | 955                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 13.2                                                                              | 0.0                                                                               | 16.3                                                                              | 20.5                                                                              | 19.8                                                                              | 19.7                                                                              | 23.0                                                                                | 18.9                                                                                | 19.0                                                                                | 21.8                                                                                | 17.1                                                                                | 17.2                                                                                |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.0                                                                               | 2.8                                                                               | 3.0                                                                               | 0.8                                                                               | 0.8                                                                               | 11.6                                                                                | 1.0                                                                                 | 1.3                                                                                 | 9.0                                                                                 | 0.7                                                                                 | 0.7                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.2                                                                               | 0.0                                                                               | 4.6                                                                               | 1.5                                                                               | 0.7                                                                               | 0.6                                                                               | 0.6                                                                                 | 1.2                                                                                 | 1.2                                                                                 | 1.7                                                                                 | 1.5                                                                                 | 1.5                                                                                 |
| LnGrp Delay(d),s/veh         | 13.2                                                                              | 0.0                                                                               | 19.1                                                                              | 23.5                                                                              | 20.6                                                                              | 20.6                                                                              | 34.7                                                                                | 19.9                                                                                | 20.2                                                                                | 30.7                                                                                | 17.8                                                                                | 17.8                                                                                |
| LnGrp LOS                    | B                                                                                 |                                                                                   | B                                                                                 | C                                                                                 | C                                                                                 | C                                                                                 | C                                                                                   | B                                                                                   | C                                                                                   | C                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 368                                                                               |                                                                                   |                                                                                   | 209                                                                               |                                                                                   |                                                                                     | 222                                                                                 |                                                                                     |                                                                                     | 353                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 18.7                                                                              |                                                                                   |                                                                                   | 22.1                                                                              |                                                                                   |                                                                                     | 22.2                                                                                |                                                                                     |                                                                                     | 21.7                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 8.7                                                                               | 11.6                                                                              |                                                                                   | 17.7                                                                              | 6.4                                                                               | 13.9                                                                              |                                                                                     | 10.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |                                                                                     | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 10.0                                                                              | 20.0                                                                              |                                                                                   | 22.0                                                                              | 5.0                                                                               | 25.0                                                                              |                                                                                     | 18.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 4.8                                                                               | 4.6                                                                               |                                                                                   | 11.0                                                                              | 2.9                                                                               | 4.9                                                                               |                                                                                     | 4.9                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 2.1                                                                               |                                                                                   | 1.7                                                                               | 0.0                                                                               | 2.3                                                                               |                                                                                     | 0.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 20.9                                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 9: West Bernardo Dr & Via Del Campo

3/24/2016

|                              |  |  |  |  |  |  |   |   |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|---|
| Movement                     | EBL                                                                               | EBT                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                               |   |   |
| Lane Configurations          |  |  |  |                                                                                   |  |  |   |   |
| Traffic Volume (veh/h)       | 365                                                                               | 506                                                                               | 271                                                                               | 150                                                                               | 47                                                                                | 45                                                                                |   |   |
| Future Volume (veh/h)        | 365                                                                               | 506                                                                               | 271                                                                               | 150                                                                               | 47                                                                                | 45                                                                                |   |   |
| Number                       | 5                                                                                 | 2                                                                                 | 6                                                                                 | 16                                                                                | 7                                                                                 | 14                                                                                |   |   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |   |   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              |   |   |
| Adj Flow Rate, veh/h         | 429                                                                               | 595                                                                               | 319                                                                               | 176                                                                               | 55                                                                                | 53                                                                                |   |   |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 |   |   |
| Peak Hour Factor             | 0.85                                                                              | 0.85                                                                              | 0.85                                                                              | 0.85                                                                              | 0.85                                                                              | 0.85                                                                              |   |   |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |   |
| Cap, veh/h                   | 948                                                                               | 2838                                                                              | 425                                                                               | 229                                                                               | 100                                                                               | 89                                                                                |   |   |
| Arrive On Green              | 0.53                                                                              | 0.80                                                                              | 0.19                                                                              | 0.19                                                                              | 0.06                                                                              | 0.06                                                                              |   |   |
| Sat Flow, veh/h              | 1774                                                                              | 3632                                                                              | 2313                                                                              | 1198                                                                              | 1774                                                                              | 1583                                                                              |   |   |
| Grp Volume(v), veh/h         | 429                                                                               | 595                                                                               | 253                                                                               | 242                                                                               | 55                                                                                | 53                                                                                |   |   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1770                                                                              | 1648                                                                              | 1774                                                                              | 1583                                                                              |   |   |
| Q Serve(g_s), s              | 10.7                                                                              | 2.9                                                                               | 9.7                                                                               | 10.0                                                                              | 2.2                                                                               | 2.4                                                                               |   |   |
| Cycle Q Clear(g_c), s        | 10.7                                                                              | 2.9                                                                               | 9.7                                                                               | 10.0                                                                              | 2.2                                                                               | 2.4                                                                               |   |   |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   | 0.73                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Lane Grp Cap(c), veh/h       | 948                                                                               | 2838                                                                              | 339                                                                               | 315                                                                               | 100                                                                               | 89                                                                                |   |   |
| V/C Ratio(X)                 | 0.45                                                                              | 0.21                                                                              | 0.75                                                                              | 0.77                                                                              | 0.55                                                                              | 0.59                                                                              |   |   |
| Avail Cap(c_a), veh/h        | 948                                                                               | 2838                                                                              | 484                                                                               | 451                                                                               | 545                                                                               | 486                                                                               |   |   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Uniform Delay (d), s/veh     | 10.3                                                                              | 1.7                                                                               | 27.5                                                                              | 27.6                                                                              | 33.1                                                                              | 33.1                                                                              |   |   |
| Incr Delay (d2), s/veh       | 0.3                                                                               | 0.2                                                                               | 3.8                                                                               | 4.9                                                                               | 4.6                                                                               | 6.2                                                                               |   |   |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |   |
| %ile BackOfQ(50%),veh/ln     | 5.2                                                                               | 1.4                                                                               | 5.1                                                                               | 5.0                                                                               | 1.2                                                                               | 2.2                                                                               |   |   |
| LnGrp Delay(d),s/veh         | 10.6                                                                              | 1.9                                                                               | 31.3                                                                              | 32.5                                                                              | 37.7                                                                              | 39.3                                                                              |   |   |
| LnGrp LOS                    | B                                                                                 | A                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | D                                                                                 |   |   |
| Approach Vol, veh/h          |                                                                                   | 1024                                                                              | 495                                                                               |                                                                                   | 108                                                                               |                                                                                   |   |   |
| Approach Delay, s/veh        |                                                                                   | 5.5                                                                               | 31.9                                                                              |                                                                                   | 38.5                                                                              |                                                                                   |   |   |
| Approach LOS                 |                                                                                   | A                                                                                 | C                                                                                 |                                                                                   | D                                                                                 |                                                                                   |   |   |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8 |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |   |   |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 63.2                                                                              |                                                                                   | 8.8                                                                               | 43.9                                                                              | 19.3                                                                              |   |   |
| Change Period (Y+Rc), s      |                                                                                   | 5.5                                                                               |                                                                                   | * 4.7                                                                             | 5.5                                                                               | * 5.5                                                                             |   |   |
| Max Green Setting (Gmax), s  |                                                                                   | 57.7                                                                              |                                                                                   | * 22                                                                              | 33.6                                                                              | * 20                                                                              |   |   |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 4.9                                                                               |                                                                                   | 4.4                                                                               | 12.7                                                                              | 12.0                                                                              |   |   |
| Green Ext Time (p_c), s      |                                                                                   | 5.9                                                                               |                                                                                   | 0.2                                                                               | 5.2                                                                               | 1.7                                                                               |   |   |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 15.7                                                                              |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |   |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |

# HCM 2010 Signalized Intersection Summary

## 10: Bernardo Center Dr & West Bernardo Dr

3/24/2016

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|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|
| Movement                     | EBL                                                                               | EBT                                                                               | WBU                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                                 |      |
| Lane Configurations          |  |  |  |  |  |  |  |      |
| Traffic Volume (veh/h)       | 601                                                                               | 450                                                                               | 0                                                                                 | 484                                                                               | 682                                                                               | 55                                                                                | 186                                                                                 |      |
| Future Volume (veh/h)        | 601                                                                               | 450                                                                               | 0                                                                                 | 484                                                                               | 682                                                                               | 55                                                                                | 186                                                                                 |      |
| Number                       | 1                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 12                                                                                | 3                                                                                 | 18                                                                                  |      |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   |      |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.97                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              |                                                                                   | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                                |      |
| Adj Flow Rate, veh/h         | 675                                                                               | 506                                                                               |                                                                                   | 544                                                                               | 766                                                                               | 62                                                                                | 209                                                                                 |      |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                   |      |
| Peak Hour Factor             | 0.89                                                                              | 0.89                                                                              |                                                                                   | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                                |      |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   |      |
| Cap, veh/h                   | 834                                                                               | 2581                                                                              |                                                                                   | 793                                                                               | 1528                                                                              | 237                                                                               | 595                                                                                 |      |
| Arrive On Green              | 0.24                                                                              | 0.73                                                                              |                                                                                   | 0.43                                                                              | 0.43                                                                              | 0.13                                                                              | 0.13                                                                                |      |
| Sat Flow, veh/h              | 3442                                                                              | 3632                                                                              |                                                                                   | 1863                                                                              | 2716                                                                              | 1774                                                                              | 1583                                                                                |      |
| Grp Volume(v), veh/h         | 675                                                                               | 506                                                                               |                                                                                   | 544                                                                               | 766                                                                               | 62                                                                                | 209                                                                                 |      |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1770                                                                              |                                                                                   | 1863                                                                              | 1358                                                                              | 1774                                                                              | 1583                                                                                |      |
| Q Serve(g_s), s              | 13.3                                                                              | 3.3                                                                               |                                                                                   | 17.1                                                                              | 12.5                                                                              | 2.3                                                                               | 6.8                                                                                 |      |
| Cycle Q Clear(g_c), s        | 13.3                                                                              | 3.3                                                                               |                                                                                   | 17.1                                                                              | 12.5                                                                              | 2.3                                                                               | 6.8                                                                                 |      |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Lane Grp Cap(c), veh/h       | 834                                                                               | 2581                                                                              |                                                                                   | 793                                                                               | 1528                                                                              | 237                                                                               | 595                                                                                 |      |
| V/C Ratio(X)                 | 0.81                                                                              | 0.20                                                                              |                                                                                   | 0.69                                                                              | 0.50                                                                              | 0.26                                                                              | 0.35                                                                                |      |
| Avail Cap(c_a), veh/h        | 1367                                                                              | 3405                                                                              |                                                                                   | 1141                                                                              | 2035                                                                              | 813                                                                               | 1109                                                                                |      |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Uniform Delay (d), s/veh     | 25.7                                                                              | 3.1                                                                               |                                                                                   | 16.8                                                                              | 9.8                                                                               | 28.0                                                                              | 16.2                                                                                |      |
| Incr Delay (d2), s/veh       | 1.9                                                                               | 0.0                                                                               |                                                                                   | 1.1                                                                               | 0.3                                                                               | 0.6                                                                               | 0.4                                                                                 |      |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 |      |
| %ile BackOfQ(50%),veh/ln     | 6.5                                                                               | 1.6                                                                               |                                                                                   | 9.0                                                                               | 4.7                                                                               | 1.1                                                                               | 3.0                                                                                 |      |
| LnGrp Delay(d),s/veh         | 27.6                                                                              | 3.1                                                                               |                                                                                   | 17.8                                                                              | 10.0                                                                              | 28.6                                                                              | 16.5                                                                                |      |
| LnGrp LOS                    | C                                                                                 | A                                                                                 |                                                                                   | B                                                                                 | B                                                                                 | C                                                                                 | B                                                                                   |      |
| Approach Vol, veh/h          |                                                                                   | 1181                                                                              |                                                                                   | 1310                                                                              |                                                                                   | 271                                                                               |                                                                                     |      |
| Approach Delay, s/veh        |                                                                                   | 17.1                                                                              |                                                                                   | 13.3                                                                              |                                                                                   | 19.3                                                                              |                                                                                     |      |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   | B                                                                                 |                                                                                   | B                                                                                 |                                                                                     |      |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8    |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                     | 8    |
| Phs Duration (G+Y+Rc), s     | 21.9                                                                              | 36.2                                                                              |                                                                                   |                                                                                   |                                                                                   | 58.0                                                                              |                                                                                     | 14.0 |
| Change Period (Y+Rc), s      | 4.4                                                                               | 5.5                                                                               |                                                                                   |                                                                                   |                                                                                   | * 5.5                                                                             |                                                                                     | 4.4  |
| Max Green Setting (Gmax), s  | 28.6                                                                              | 44.1                                                                              |                                                                                   |                                                                                   |                                                                                   | * 69                                                                              |                                                                                     | 33.0 |
| Max Q Clear Time (g_c+I1), s | 15.3                                                                              | 19.1                                                                              |                                                                                   |                                                                                   |                                                                                   | 5.3                                                                               |                                                                                     | 8.8  |
| Green Ext Time (p_c), s      | 2.1                                                                               | 11.6                                                                              |                                                                                   |                                                                                   |                                                                                   | 15.1                                                                              |                                                                                     | 0.8  |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 15.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |

# HCM 2010 Signalized Intersection Summary

## 1: Camino San Bernardo & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 1                                                                                 | 899                                                                               | 208                                                                               | 337                                                                               | 701                                                                               | 0                                                                                 | 109                                                                                | 0                                                                                   | 310                                                                                 | 3                                                                                   | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 1                                                                                 | 899                                                                               | 208                                                                               | 337                                                                               | 701                                                                               | 0                                                                                 | 109                                                                                | 0                                                                                   | 310                                                                                 | 3                                                                                   | 0                                                                                   | 0                                                                                   |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 1                                                                                 | 936                                                                               | 217                                                                               | 351                                                                               | 730                                                                               | 0                                                                                 | 114                                                                                | 0                                                                                   | 323                                                                                 | 3                                                                                   | 0                                                                                   | 0                                                                                   |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                  | 2                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                               | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 2                                                                                 | 1199                                                                              | 278                                                                               | 450                                                                               | 1949                                                                              | 0                                                                                 | 521                                                                                | 441                                                                                 | 394                                                                                 | 158                                                                                 | 0                                                                                   | 0                                                                                   |
| Arrive On Green              | 0.00                                                                              | 0.42                                                                              | 0.42                                                                              | 0.13                                                                              | 0.55                                                                              | 0.00                                                                              | 0.25                                                                               | 0.00                                                                                | 0.25                                                                                | 0.25                                                                                | 0.00                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 2846                                                                              | 659                                                                               | 3442                                                                              | 3632                                                                              | 0                                                                                 | 1412                                                                               | 1770                                                                                | 1581                                                                                | 239                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Volume(v), veh/h         | 1                                                                                 | 582                                                                               | 571                                                                               | 351                                                                               | 730                                                                               | 0                                                                                 | 114                                                                                | 0                                                                                   | 323                                                                                 | 3                                                                                   | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1735                                                                              | 1721                                                                              | 1770                                                                              | 0                                                                                 | 1412                                                                               | 1770                                                                                | 1581                                                                                | 239                                                                                 | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.0                                                                               | 20.7                                                                              | 20.8                                                                              | 7.2                                                                               | 8.5                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 14.1                                                                                | 0.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 20.7                                                                              | 20.8                                                                              | 7.2                                                                               | 8.5                                                                               | 0.0                                                                               | 3.8                                                                                | 0.0                                                                                 | 14.1                                                                                | 14.3                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.38                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.00                                                                                |
| Lane Grp Cap(c), veh/h       | 2                                                                                 | 746                                                                               | 731                                                                               | 450                                                                               | 1949                                                                              | 0                                                                                 | 521                                                                                | 441                                                                                 | 394                                                                                 | 158                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.41                                                                              | 0.78                                                                              | 0.78                                                                              | 0.78                                                                              | 0.37                                                                              | 0.00                                                                              | 0.22                                                                               | 0.00                                                                                | 0.82                                                                                | 0.02                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 121                                                                               | 836                                                                               | 820                                                                               | 566                                                                               | 2011                                                                              | 0                                                                                 | 730                                                                                | 703                                                                                 | 628                                                                                 | 314                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 36.4                                                                              | 18.2                                                                              | 18.2                                                                              | 30.7                                                                              | 9.3                                                                               | 0.0                                                                               | 22.0                                                                               | 0.0                                                                                 | 25.9                                                                                | 32.6                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 84.1                                                                              | 4.3                                                                               | 4.4                                                                               | 5.4                                                                               | 0.1                                                                               | 0.0                                                                               | 0.2                                                                                | 0.0                                                                                 | 4.7                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.1                                                                               | 10.9                                                                              | 10.7                                                                              | 3.8                                                                               | 4.2                                                                               | 0.0                                                                               | 1.9                                                                                | 0.0                                                                                 | 6.6                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 120.6                                                                             | 22.5                                                                              | 22.7                                                                              | 36.2                                                                              | 9.4                                                                               | 0.0                                                                               | 22.2                                                                               | 0.0                                                                                 | 30.5                                                                                | 32.6                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | F                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | A                                                                                 |                                                                                   | C                                                                                  |                                                                                     | C                                                                                   | C                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1154                                                                              |                                                                                   |                                                                                   | 1081                                                                              |                                                                                   |                                                                                    | 437                                                                                 |                                                                                     |                                                                                     | 3                                                                                   |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 22.7                                                                              |                                                                                   |                                                                                   | 18.1                                                                              |                                                                                   |                                                                                    | 28.4                                                                                |                                                                                     |                                                                                     | 32.6                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 13.5                                                                              | 36.3                                                                              |                                                                                   | 23.2                                                                              | 4.1                                                                               | 45.7                                                                              |                                                                                    | 23.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 5.5                                                                               |                                                                                   | 5.0                                                                               | 4.0                                                                               | 5.5                                                                               |                                                                                    | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 12.0                                                                              | 34.5                                                                              |                                                                                   | 29.0                                                                              | 5.0                                                                               | 41.5                                                                              |                                                                                    | 29.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 9.2                                                                               | 22.8                                                                              |                                                                                   | 16.3                                                                              | 2.0                                                                               | 10.5                                                                              |                                                                                    | 16.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.3                                                                               | 8.0                                                                               |                                                                                   | 1.8                                                                               | 0.0                                                                               | 14.7                                                                              |                                                                                    | 1.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 21.8                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 2: Via Del Campo & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 6                                                                                 | 1280                                                                              | 49                                                                                | 18                                                                                | 874                                                                               | 1                                                                                 | 276                                                                                | 0                                                                                   | 341                                                                                 | 1                                                                                   | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 6                                                                                 | 1280                                                                              | 49                                                                                | 18                                                                                | 874                                                                               | 1                                                                                 | 276                                                                                | 0                                                                                   | 341                                                                                 | 1                                                                                   | 0                                                                                   | 0                                                                                   |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.98                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1900                                                                               | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 7                                                                                 | 1407                                                                              | 54                                                                                | 20                                                                                | 960                                                                               | 1                                                                                 | 303                                                                                | 0                                                                                   | 375                                                                                 | 1                                                                                   | 0                                                                                   | 0                                                                                   |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 0                                                                                  | 1                                                                                   | 1                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                               | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 13                                                                                | 1732                                                                              | 66                                                                                | 32                                                                                | 1847                                                                              | 2                                                                                 | 547                                                                                | 0                                                                                   | 442                                                                                 | 229                                                                                 | 0                                                                                   | 0                                                                                   |
| Arrive On Green              | 0.01                                                                              | 0.50                                                                              | 0.50                                                                              | 0.02                                                                              | 0.51                                                                              | 0.51                                                                              | 0.28                                                                               | 0.00                                                                                | 0.28                                                                                | 0.28                                                                                | 0.00                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 3476                                                                              | 133                                                                               | 1774                                                                              | 3628                                                                              | 4                                                                                 | 1602                                                                               | 0                                                                                   | 1558                                                                                | 481                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Volume(v), veh/h         | 7                                                                                 | 715                                                                               | 746                                                                               | 20                                                                                | 468                                                                               | 493                                                                               | 303                                                                                | 0                                                                                   | 375                                                                                 | 1                                                                                   | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1839                                                                              | 1774                                                                              | 1770                                                                              | 1862                                                                              | 1602                                                                               | 0                                                                                   | 1558                                                                                | 481                                                                                 | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.3                                                                               | 26.3                                                                              | 26.5                                                                              | 0.9                                                                               | 13.7                                                                              | 13.7                                                                              | 0.0                                                                                | 0.0                                                                                 | 17.6                                                                                | 0.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.3                                                                               | 26.3                                                                              | 26.5                                                                              | 0.9                                                                               | 13.7                                                                              | 13.7                                                                              | 11.4                                                                               | 0.0                                                                                 | 17.6                                                                                | 11.5                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.07                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.00                                                                                |
| Lane Grp Cap(c), veh/h       | 13                                                                                | 882                                                                               | 916                                                                               | 32                                                                                | 901                                                                               | 948                                                                               | 547                                                                                | 0                                                                                   | 442                                                                                 | 229                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.55                                                                              | 0.81                                                                              | 0.81                                                                              | 0.62                                                                              | 0.52                                                                              | 0.52                                                                              | 0.55                                                                               | 0.00                                                                                | 0.85                                                                                | 0.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 92                                                                                | 943                                                                               | 980                                                                               | 94                                                                                | 949                                                                               | 999                                                                               | 680                                                                                | 0                                                                                   | 588                                                                                 | 328                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 38.3                                                                              | 16.3                                                                              | 16.4                                                                              | 37.7                                                                              | 12.7                                                                              | 12.7                                                                              | 24.0                                                                               | 0.0                                                                                 | 26.2                                                                                | 28.9                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 31.7                                                                              | 5.1                                                                               | 5.1                                                                               | 18.2                                                                              | 0.5                                                                               | 0.4                                                                               | 0.9                                                                                | 0.0                                                                                 | 8.8                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.3                                                                               | 14.0                                                                              | 14.5                                                                              | 0.6                                                                               | 6.8                                                                               | 7.1                                                                               | 5.7                                                                                | 0.0                                                                                 | 8.6                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 69.9                                                                              | 21.5                                                                              | 21.4                                                                              | 55.9                                                                              | 13.1                                                                              | 13.1                                                                              | 24.8                                                                               | 0.0                                                                                 | 34.9                                                                                | 28.9                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | E                                                                                 | C                                                                                 | C                                                                                 | E                                                                                 | B                                                                                 | B                                                                                 | C                                                                                  |                                                                                     | C                                                                                   | C                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1468                                                                              |                                                                                   |                                                                                   | 981                                                                               |                                                                                   |                                                                                    | 678                                                                                 |                                                                                     |                                                                                     | 1                                                                                   |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 21.7                                                                              |                                                                                   |                                                                                   | 14.0                                                                              |                                                                                   |                                                                                    | 30.4                                                                                |                                                                                     |                                                                                     | 28.9                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 5.8                                                                               | 44.4                                                                              |                                                                                   | 27.1                                                                              | 5.0                                                                               | 45.3                                                                              |                                                                                    | 27.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.4                                                                               | 5.9                                                                               |                                                                                   | * 5.2                                                                             | 4.4                                                                               | * 5.9                                                                             |                                                                                    | 5.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 4.1                                                                               | 41.2                                                                              |                                                                                   | * 30                                                                              | 4.0                                                                               | * 42                                                                              |                                                                                    | 29.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 2.9                                                                               | 28.5                                                                              |                                                                                   | 13.5                                                                              | 2.3                                                                               | 15.7                                                                              |                                                                                    | 19.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 10.1                                                                              |                                                                                   | 3.0                                                                               | 0.0                                                                               | 17.3                                                                              |                                                                                    | 2.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 21.2                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# HCM 2010 Signalized Intersection Summary

## 3: Project Dwy/Matinal Rd & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 109                                                                               | 1433                                                                              | 0                                                                                 | 1                                                                                 | 809                                                                               | 45                                                                                | 0                                                                                   | 0                                                                                   | 0                                                                                   | 40                                                                                  | 0                                                                                   | 105                                                                                 |
| Future Volume (veh/h)        | 109                                                                               | 1433                                                                              | 0                                                                                 | 1                                                                                 | 809                                                                               | 45                                                                                | 0                                                                                   | 0                                                                                   | 0                                                                                   | 40                                                                                  | 0                                                                                   | 105                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                   | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.98                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 121                                                                               | 1592                                                                              | 0                                                                                 | 1                                                                                 | 899                                                                               | 50                                                                                | 0                                                                                   | 0                                                                                   | 0                                                                                   | 44                                                                                  | 0                                                                                   | 117                                                                                 |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                   | 1                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 157                                                                               | 2157                                                                              | 0                                                                                 | 3                                                                                 | 1780                                                                              | 99                                                                                | 116                                                                                 | 256                                                                                 | 0                                                                                   | 117                                                                                 | 15                                                                                  | 154                                                                                 |
| Arrive On Green              | 0.09                                                                              | 0.61                                                                              | 0.00                                                                              | 0.00                                                                              | 0.52                                                                              | 0.52                                                                              | 0.00                                                                                | 0.00                                                                                | 0.00                                                                                | 0.14                                                                                | 0.00                                                                                | 0.14                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 3632                                                                              | 0                                                                                 | 1774                                                                              | 3409                                                                              | 190                                                                               | 1270                                                                                | 1863                                                                                | 0                                                                                   | 310                                                                                 | 112                                                                                 | 1123                                                                                |
| Grp Volume(v), veh/h         | 121                                                                               | 1592                                                                              | 0                                                                                 | 1                                                                                 | 467                                                                               | 482                                                                               | 0                                                                                   | 0                                                                                   | 0                                                                                   | 161                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 0                                                                                 | 1774                                                                              | 1770                                                                              | 1829                                                                              | 1270                                                                                | 1863                                                                                | 0                                                                                   | 1545                                                                                | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 4.1                                                                               | 19.8                                                                              | 0.0                                                                               | 0.0                                                                               | 10.6                                                                              | 10.6                                                                              | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 4.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 4.1                                                                               | 19.8                                                                              | 0.0                                                                               | 0.0                                                                               | 10.6                                                                              | 10.6                                                                              | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 6.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                              |                                                                                   | 0.10                                                                              | 1.00                                                                                |                                                                                     | 0.00                                                                                | 0.27                                                                                |                                                                                     | 0.73                                                                                |
| Lane Grp Cap(c), veh/h       | 157                                                                               | 2157                                                                              | 0                                                                                 | 3                                                                                 | 924                                                                               | 955                                                                               | 116                                                                                 | 256                                                                                 | 0                                                                                   | 286                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.77                                                                              | 0.74                                                                              | 0.00                                                                              | 0.35                                                                              | 0.51                                                                              | 0.51                                                                              | 0.00                                                                                | 0.00                                                                                | 0.00                                                                                | 0.56                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 344                                                                               | 2426                                                                              | 0                                                                                 | 115                                                                               | 1013                                                                              | 1047                                                                              | 529                                                                                 | 861                                                                                 | 0                                                                                   | 764                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                                | 0.00                                                                                | 0.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 27.6                                                                              | 8.6                                                                               | 0.0                                                                               | 30.9                                                                              | 9.6                                                                               | 9.6                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 25.6                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 7.8                                                                               | 1.1                                                                               | 0.0                                                                               | 60.2                                                                              | 0.4                                                                               | 0.4                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 1.7                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 2.4                                                                               | 9.8                                                                               | 0.0                                                                               | 0.1                                                                               | 5.2                                                                               | 5.3                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 2.8                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 35.4                                                                              | 9.7                                                                               | 0.0                                                                               | 91.1                                                                              | 10.0                                                                              | 10.0                                                                              | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 27.4                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | D                                                                                 | A                                                                                 |                                                                                   | F                                                                                 | B                                                                                 | B                                                                                 |                                                                                     |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1713                                                                              |                                                                                   |                                                                                   | 950                                                                               |                                                                                   |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 161                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 11.5                                                                              |                                                                                   |                                                                                   | 10.1                                                                              |                                                                                   |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     | 27.4                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 4.1                                                                               | 44.7                                                                              |                                                                                   | 13.1                                                                              | 9.5                                                                               | 39.3                                                                              |                                                                                     | 13.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 7.0                                                                               |                                                                                   | 4.6                                                                               | 4.0                                                                               | * 7                                                                               |                                                                                     | * 4.6                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 4.0                                                                               | 42.4                                                                              |                                                                                   | 28.0                                                                              | 12.0                                                                              | * 35                                                                              |                                                                                     | * 29                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 2.0                                                                               | 21.8                                                                              |                                                                                   | 8.2                                                                               | 6.1                                                                               | 12.6                                                                              |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 15.9                                                                              |                                                                                   | 0.9                                                                               | 0.1                                                                               | 17.2                                                                              |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          | 11.9                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 4: West Bernardo Dr & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|--|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |  |  |  |  |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |  |  |  |                                                                                     |  |  |  |  |
| Traffic Volume (veh/h)       | 154                                                                               | 1374                                                                              | 21                                                                                | 132                                                                               | 829                                                                               | 477                                                                               | 111                                                                                | 318                                                                                 | 527                                                                                 | 325                                                                                 | 64                                                                                  | 65                                                                                  |  |  |  |  |
| Future Volume (veh/h)        | 154                                                                               | 1374                                                                              | 21                                                                                | 132                                                                               | 829                                                                               | 477                                                                               | 111                                                                                | 318                                                                                 | 527                                                                                 | 325                                                                                 | 64                                                                                  | 65                                                                                  |  |  |  |  |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |  |  |  |  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |  |  |  |  |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |  |  |  |  |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |  |  |  |  |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                               | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1900                                                                                |  |  |  |  |
| Adj Flow Rate, veh/h         | 157                                                                               | 1402                                                                              | 21                                                                                | 135                                                                               | 846                                                                               | 487                                                                               | 113                                                                                | 324                                                                                 | 538                                                                                 | 332                                                                                 | 65                                                                                  | 66                                                                                  |  |  |  |  |
| Adj No. of Lanes             | 2                                                                                 | 3                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 | 1                                                                                 | 2                                                                                  | 2                                                                                   | 1                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |  |  |  |  |
| Peak Hour Factor             | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                               | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                |  |  |  |  |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |  |  |  |  |
| Cap, veh/h                   | 219                                                                               | 1707                                                                              | 26                                                                                | 359                                                                               | 1363                                                                              | 608                                                                               | 185                                                                                | 871                                                                                 | 553                                                                                 | 420                                                                                 | 556                                                                                 | 498                                                                                 |  |  |  |  |
| Arrive On Green              | 0.06                                                                              | 0.33                                                                              | 0.33                                                                              | 0.10                                                                              | 0.39                                                                              | 0.39                                                                              | 0.05                                                                               | 0.25                                                                                | 0.25                                                                                | 0.12                                                                                | 0.31                                                                                | 0.31                                                                                |  |  |  |  |
| Sat Flow, veh/h              | 3442                                                                              | 5162                                                                              | 77                                                                                | 3442                                                                              | 3539                                                                              | 1580                                                                              | 3442                                                                               | 3539                                                                                | 1578                                                                                | 3442                                                                                | 1770                                                                                | 1583                                                                                |  |  |  |  |
| Grp Volume(v), veh/h         | 157                                                                               | 921                                                                               | 502                                                                               | 135                                                                               | 846                                                                               | 487                                                                               | 113                                                                                | 324                                                                                 | 538                                                                                 | 332                                                                                 | 65                                                                                  | 66                                                                                  |  |  |  |  |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1695                                                                              | 1849                                                                              | 1721                                                                              | 1770                                                                              | 1580                                                                              | 1721                                                                               | 1770                                                                                | 1578                                                                                | 1721                                                                                | 1770                                                                                | 1583                                                                                |  |  |  |  |
| Q Serve(g_s), s              | 4.9                                                                               | 27.1                                                                              | 27.1                                                                              | 4.0                                                                               | 21.0                                                                              | 29.8                                                                              | 3.5                                                                                | 8.3                                                                                 | 19.4                                                                                | 10.2                                                                                | 2.8                                                                                 | 3.2                                                                                 |  |  |  |  |
| Cycle Q Clear(g_c), s        | 4.9                                                                               | 27.1                                                                              | 27.1                                                                              | 4.0                                                                               | 21.0                                                                              | 29.8                                                                              | 3.5                                                                                | 8.3                                                                                 | 19.4                                                                                | 10.2                                                                                | 2.8                                                                                 | 3.2                                                                                 |  |  |  |  |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.04                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |  |  |  |  |
| Lane Grp Cap(c), veh/h       | 219                                                                               | 1121                                                                              | 611                                                                               | 359                                                                               | 1363                                                                              | 608                                                                               | 185                                                                                | 871                                                                                 | 553                                                                                 | 420                                                                                 | 556                                                                                 | 498                                                                                 |  |  |  |  |
| V/C Ratio(X)                 | 0.72                                                                              | 0.82                                                                              | 0.82                                                                              | 0.38                                                                              | 0.62                                                                              | 0.80                                                                              | 0.61                                                                               | 0.37                                                                                | 0.97                                                                                | 0.79                                                                                | 0.12                                                                                | 0.13                                                                                |  |  |  |  |
| Avail Cap(c_a), veh/h        | 291                                                                               | 1251                                                                              | 682                                                                               | 494                                                                               | 1521                                                                              | 679                                                                               | 1080                                                                               | 1273                                                                                | 733                                                                                 | 953                                                                                 | 572                                                                                 | 511                                                                                 |  |  |  |  |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |  |  |  |  |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |  |  |  |  |
| Uniform Delay (d), s/veh     | 49.9                                                                              | 33.4                                                                              | 33.4                                                                              | 45.4                                                                              | 27.0                                                                              | 29.7                                                                              | 50.3                                                                               | 34.0                                                                                | 19.3                                                                                | 46.4                                                                                | 26.5                                                                                | 26.6                                                                                |  |  |  |  |
| Incr Delay (d2), s/veh       | 5.6                                                                               | 4.1                                                                               | 7.3                                                                               | 0.7                                                                               | 0.7                                                                               | 6.2                                                                               | 3.2                                                                                | 0.3                                                                                 | 23.3                                                                                | 3.4                                                                                 | 0.1                                                                                 | 0.1                                                                                 |  |  |  |  |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |  |  |  |  |
| %ile BackOfQ(50%),veh/ln     | 2.5                                                                               | 13.3                                                                              | 15.0                                                                              | 1.9                                                                               | 10.3                                                                              | 14.0                                                                              | 1.7                                                                                | 4.1                                                                                 | 15.7                                                                                | 5.0                                                                                 | 1.4                                                                                 | 1.4                                                                                 |  |  |  |  |
| LnGrp Delay(d),s/veh         | 55.5                                                                              | 37.5                                                                              | 40.7                                                                              | 46.0                                                                              | 27.6                                                                              | 35.9                                                                              | 53.5                                                                               | 34.3                                                                                | 42.5                                                                                | 49.7                                                                                | 26.6                                                                                | 26.8                                                                                |  |  |  |  |
| LnGrp LOS                    | E                                                                                 | D                                                                                 | D                                                                                 | D                                                                                 | C                                                                                 | D                                                                                 | D                                                                                  | C                                                                                   | D                                                                                   | D                                                                                   | C                                                                                   | C                                                                                   |  |  |  |  |
| Approach Vol, veh/h          | 1580                                                                              |                                                                                   |                                                                                   |                                                                                   | 1468                                                                              |                                                                                   |                                                                                    |                                                                                     | 975                                                                                 |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Approach Delay, s/veh        | 40.3                                                                              |                                                                                   |                                                                                   |                                                                                   | 32.1                                                                              |                                                                                   |                                                                                    |                                                                                     | 41.1                                                                                |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Approach LOS                 | D                                                                                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Phs Duration (G+Y+Rc), s     | 17.0                                                                              | 41.8                                                                              | 10.2                                                                              | 39.6                                                                              | 11.3                                                                              | 47.6                                                                              | 17.7                                                                               | 32.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Change Period (Y+Rc), s      | 5.7                                                                               | * 5.9                                                                             | 4.4                                                                               | 5.4                                                                               | 4.4                                                                               | 5.7                                                                               | 4.4                                                                                | 5.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Max Green Setting (Gmax), s  | 15.6                                                                              | * 40                                                                              | 34.1                                                                              | 35.1                                                                              | 9.2                                                                               | 46.7                                                                              | 30.1                                                                               | 39.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Max Q Clear Time (g_c+I1), s | 6.0                                                                               | 29.1                                                                              | 5.5                                                                               | 5.2                                                                               | 6.9                                                                               | 31.8                                                                              | 12.2                                                                               | 21.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Green Ext Time (p_c), s      | 5.5                                                                               | 6.8                                                                               | 0.3                                                                               | 5.6                                                                               | 0.1                                                                               | 7.4                                                                               | 1.1                                                                                | 4.9                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| HCM 2010 Ctrl Delay          | 38.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| HCM 2010 LOS                 | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |

# HCM 2010 Signalized Intersection Summary

## 5: I-15 SB Ramps & Rancho Bernardo Rd

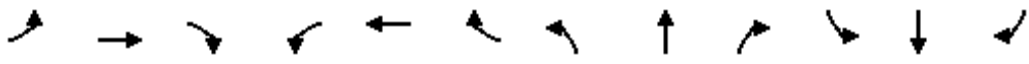
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|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |                                                                                   |  |  |                                                                                    |                                                                                     |                                                                                     |  |                                                                                     |  |
| Traffic Volume (veh/h)       | 0                                                                                 | 1452                                                                              | 775                                                                               | 0                                                                                 | 1005                                                                              | 559                                                                               | 0                                                                                  | 0                                                                                   | 0                                                                                   | 409                                                                                 | 0                                                                                   | 373                                                                                 |
| Future Volume (veh/h)        | 0                                                                                 | 1452                                                                              | 775                                                                               | 0                                                                                 | 1005                                                                              | 559                                                                               | 0                                                                                  | 0                                                                                   | 0                                                                                   | 409                                                                                 | 0                                                                                   | 373                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                |                                                                                    |                                                                                     |                                                                                     | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 0                                                                                 | 1863                                                                              | 1863                                                                              | 0                                                                                 | 1863                                                                              | 1863                                                                              |                                                                                    |                                                                                     |                                                                                     | 1863                                                                                | 0                                                                                   | 1863                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 1853                                                                              | 580                                                                               | 0                                                                                 | 1047                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 426                                                                                 | 0                                                                                   | 389                                                                                 |
| Adj No. of Lanes             | 0                                                                                 | 3                                                                                 | 1                                                                                 | 0                                                                                 | 3                                                                                 | 1                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 2                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.96                                                                              | 0.96                                                                              | 0.92                                                                              | 0.96                                                                              | 0.96                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.96                                                                                | 0.92                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %         | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 0                                                                                 | 4149                                                                              | 1175                                                                              | 0                                                                                 | 4149                                                                              | 1175                                                                              |                                                                                    |                                                                                     |                                                                                     | 579                                                                                 | 0                                                                                   | 469                                                                                 |
| Arrive On Green              | 0.00                                                                              | 0.74                                                                              | 0.74                                                                              | 0.00                                                                              | 1.00                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.17                                                                                | 0.00                                                                                | 0.17                                                                                |
| Sat Flow, veh/h              | 0                                                                                 | 5588                                                                              | 1583                                                                              | 0                                                                                 | 5588                                                                              | 1583                                                                              |                                                                                    |                                                                                     |                                                                                     | 3442                                                                                | 0                                                                                   | 2787                                                                                |
| Grp Volume(v), veh/h         | 0                                                                                 | 1853                                                                              | 580                                                                               | 0                                                                                 | 1047                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 426                                                                                 | 0                                                                                   | 389                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1863                                                                              | 1583                                                                              | 0                                                                                 | 1863                                                                              | 1583                                                                              |                                                                                    |                                                                                     |                                                                                     | 1721                                                                                | 0                                                                                   | 1393                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 17.9                                                                              | 20.8                                                                              | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 16.4                                                                                | 0.0                                                                                 | 18.9                                                                                |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 17.9                                                                              | 20.8                                                                              | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 16.4                                                                                | 0.0                                                                                 | 18.9                                                                                |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 1.00                                                                              | 0.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 4149                                                                              | 1175                                                                              | 0                                                                                 | 4149                                                                              | 1175                                                                              |                                                                                    |                                                                                     |                                                                                     | 579                                                                                 | 0                                                                                   | 469                                                                                 |
| V/C Ratio(X)                 | 0.00                                                                              | 0.45                                                                              | 0.49                                                                              | 0.00                                                                              | 0.25                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.74                                                                                | 0.00                                                                                | 0.83                                                                                |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 4149                                                                              | 1175                                                                              | 0                                                                                 | 4149                                                                              | 1175                                                                              |                                                                                    |                                                                                     |                                                                                     | 809                                                                                 | 0                                                                                   | 655                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                              | 2.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.00                                                                              | 0.50                                                                              | 0.50                                                                              | 0.00                                                                              | 0.87                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 6.9                                                                               | 7.3                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 55.3                                                                                | 0.0                                                                                 | 56.3                                                                                |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.2                                                                               | 0.7                                                                               | 0.0                                                                               | 0.1                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 2.2                                                                                 | 0.0                                                                                 | 6.3                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 9.2                                                                               | 9.3                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 8.0                                                                                 | 0.0                                                                                 | 7.7                                                                                 |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 7.1                                                                               | 8.1                                                                               | 0.0                                                                               | 0.1                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 57.5                                                                                | 0.0                                                                                 | 62.5                                                                                |
| LnGrp LOS                    |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     | E                                                                                   |                                                                                     | E                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 2433                                                                              |                                                                                   |                                                                                   | 1047                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 815                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 7.3                                                                               |                                                                                   |                                                                                   | 0.1                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 59.9                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 110.3                                                                             |                                                                                   | 29.7                                                                              |                                                                                   | 110.3                                                                             |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 6.4                                                                               |                                                                                   | 6.1                                                                               |                                                                                   | 6.4                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 94.6                                                                              |                                                                                   | 32.9                                                                              |                                                                                   | 94.6                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 22.8                                                                              |                                                                                   | 20.9                                                                              |                                                                                   | 2.0                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 54.3                                                                              |                                                                                   | 2.7                                                                               |                                                                                   | 65.2                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 15.6                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 6: I-15 NB Ramps & Rancho Bernardo Rd

3/24/2016

|                              |  |       |      |      |      |       |      |      |      |     |     |     |
|------------------------------|------------------------------------------------------------------------------------|-------|------|------|------|-------|------|------|------|-----|-----|-----|
| Movement                     | EBL                                                                                | EBT   | EBR  | WBL  | WBT  | WBR   | NBL  | NBT  | NBR  | SBL | SBT | SBR |
| Lane Configurations          |                                                                                    | ↑↑↑   | ↑    |      | ↑↑↑  | ↑     | ↑↑   |      | ↑↑   |     |     |     |
| Traffic Volume (veh/h)       | 0                                                                                  | 850   | 1011 | 0    | 957  | 487   | 607  | 0    | 432  | 0   | 0   | 0   |
| Future Volume (veh/h)        | 0                                                                                  | 850   | 1011 | 0    | 957  | 487   | 607  | 0    | 432  | 0   | 0   | 0   |
| Number                       | 5                                                                                  | 2     | 12   | 1    | 6    | 16    | 3    | 8    | 18   |     |     |     |
| Initial Q (Qb), veh          | 0                                                                                  | 0     | 0    | 0    | 0    | 0     | 0    | 0    | 0    |     |     |     |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                               |       | 1.00 | 1.00 |      | 1.00  | 1.00 |      | 1.00 |     |     |     |
| Parking Bus, Adj             | 1.00                                                                               | 1.00  | 1.00 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 |     |     |     |
| Adj Sat Flow, veh/h/ln       | 0                                                                                  | 1863  | 1863 | 0    | 1863 | 1863  | 1863 | 0    | 1863 |     |     |     |
| Adj Flow Rate, veh/h         | 0                                                                                  | 904   | 0    | 0    | 1018 | 518   | 646  | 0    | 460  |     |     |     |
| Adj No. of Lanes             | 0                                                                                  | 3     | 1    | 0    | 3    | 1     | 2    | 0    | 2    |     |     |     |
| Peak Hour Factor             | 0.92                                                                               | 0.94  | 0.94 | 0.92 | 0.94 | 0.94  | 0.94 | 0.92 | 0.94 |     |     |     |
| Percent Heavy Veh, %         | 0                                                                                  | 2     | 2    | 0    | 2    | 2     | 2    | 0    | 2    |     |     |     |
| Cap, veh/h                   | 0                                                                                  | 3826  | 1084 | 0    | 3481 | 1084  | 778  | 0    | 630  |     |     |     |
| Arrive On Green              | 0.00                                                                               | 1.00  | 0.00 | 0.00 | 0.68 | 0.68  | 0.23 | 0.00 | 0.23 |     |     |     |
| Sat Flow, veh/h              | 0                                                                                  | 5588  | 1583 | 0    | 5253 | 1583  | 3442 | 0    | 2787 |     |     |     |
| Grp Volume(v), veh/h         | 0                                                                                  | 904   | 0    | 0    | 1018 | 518   | 646  | 0    | 460  |     |     |     |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                  | 1863  | 1583 | 0    | 1695 | 1583  | 1721 | 0    | 1393 |     |     |     |
| Q Serve(g_s), s              | 0.0                                                                                | 0.0   | 0.0  | 0.0  | 11.1 | 21.5  | 25.0 | 0.0  | 21.4 |     |     |     |
| Cycle Q Clear(g_c), s        | 0.0                                                                                | 0.0   | 0.0  | 0.0  | 11.1 | 21.5  | 25.0 | 0.0  | 21.4 |     |     |     |
| Prop In Lane                 | 0.00                                                                               |       | 1.00 | 0.00 |      | 1.00  | 1.00 |      | 1.00 |     |     |     |
| Lane Grp Cap(c), veh/h       | 0                                                                                  | 3826  | 1084 | 0    | 3481 | 1084  | 778  | 0    | 630  |     |     |     |
| V/C Ratio(X)                 | 0.00                                                                               | 0.24  | 0.00 | 0.00 | 0.29 | 0.48  | 0.83 | 0.00 | 0.73 |     |     |     |
| Avail Cap(c_a), veh/h        | 0                                                                                  | 3826  | 1084 | 0    | 3481 | 1084  | 1227 | 0    | 993  |     |     |     |
| HCM Platoon Ratio            | 1.00                                                                               | 1.67  | 1.67 | 1.00 | 1.00 | 1.00  | 1.00 | 1.00 | 1.00 |     |     |     |
| Upstream Filter(I)           | 0.00                                                                               | 0.81  | 0.00 | 0.00 | 1.00 | 1.00  | 1.00 | 0.00 | 1.00 |     |     |     |
| Uniform Delay (d), s/veh     | 0.0                                                                                | 0.0   | 0.0  | 0.0  | 8.7  | 10.3  | 51.6 | 0.0  | 50.2 |     |     |     |
| Incr Delay (d2), s/veh       | 0.0                                                                                | 0.1   | 0.0  | 0.0  | 0.2  | 1.5   | 2.8  | 0.0  | 1.6  |     |     |     |
| Initial Q Delay(d3),s/veh    | 0.0                                                                                | 0.0   | 0.0  | 0.0  | 0.0  | 0.0   | 0.0  | 0.0  | 0.0  |     |     |     |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                                | 0.0   | 0.0  | 0.0  | 5.3  | 9.8   | 12.2 | 0.0  | 8.4  |     |     |     |
| LnGrp Delay(d),s/veh         | 0.0                                                                                | 0.1   | 0.0  | 0.0  | 8.9  | 11.9  | 54.4 | 0.0  | 51.9 |     |     |     |
| LnGrp LOS                    |                                                                                    | A     |      |      | A    | B     | D    |      | D    |     |     |     |
| Approach Vol, veh/h          |                                                                                    | 904   |      |      | 1536 |       |      | 1106 |      |     |     |     |
| Approach Delay, s/veh        |                                                                                    | 0.1   |      |      | 9.9  |       |      | 53.4 |      |     |     |     |
| Approach LOS                 |                                                                                    | A     |      |      | A    |       |      | D    |      |     |     |     |
| Timer                        | 1                                                                                  | 2     | 3    | 4    | 5    | 6     | 7    | 8    |      |     |     |     |
| Assigned Phs                 |                                                                                    | 2     |      |      |      | 6     |      | 8    |      |     |     |     |
| Phs Duration (G+Y+Rc), s     |                                                                                    | 102.2 |      |      |      | 102.2 |      | 37.8 |      |     |     |     |
| Change Period (Y+Rc), s      |                                                                                    | 6.4   |      |      |      | 6.4   |      | 6.1  |      |     |     |     |
| Max Green Setting (Gmax), s  |                                                                                    | 77.6  |      |      |      | 77.6  |      | 49.9 |      |     |     |     |
| Max Q Clear Time (g_c+I1), s |                                                                                    | 2.0   |      |      |      | 23.5  |      | 27.0 |      |     |     |     |
| Green Ext Time (p_c), s      |                                                                                    | 30.2  |      |      |      | 26.7  |      | 4.6  |      |     |     |     |
| <b>Intersection Summary</b>  |                                                                                    |       |      |      |      |       |      |      |      |     |     |     |
| HCM 2010 Ctrl Delay          |                                                                                    |       | 21.0 |      |      |       |      |      |      |     |     |     |
| HCM 2010 LOS                 |                                                                                    |       | C    |      |      |       |      |      |      |     |     |     |
| <b>Notes</b>                 |                                                                                    |       |      |      |      |       |      |      |      |     |     |     |

# HCM 2010 Signalized Intersection Summary

## 7: Bernardo Center Dr & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |                                                                                   |   |  |                                                                                     |  |  |  |
| Traffic Volume (veh/h)       | 246                                                                               | 640                                                                               | 295                                                                               | 123                                                                               | 608                                                                               | 145                                                                               | 430                                                                                | 465                                                                                 | 247                                                                                 | 173                                                                                 | 276                                                                                 | 97                                                                                  |
| Future Volume (veh/h)        | 246                                                                               | 640                                                                               | 295                                                                               | 123                                                                               | 608                                                                               | 145                                                                               | 430                                                                                | 465                                                                                 | 247                                                                                 | 173                                                                                 | 276                                                                                 | 97                                                                                  |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.98                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h         | 259                                                                               | 674                                                                               | 311                                                                               | 129                                                                               | 640                                                                               | 153                                                                               | 453                                                                                | 489                                                                                 | 260                                                                                 | 182                                                                                 | 291                                                                                 | 102                                                                                 |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 | 1                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                  | 2                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                               | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 334                                                                               | 1284                                                                              | 539                                                                               | 195                                                                               | 868                                                                               | 207                                                                               | 534                                                                                | 669                                                                                 | 354                                                                                 | 257                                                                                 | 775                                                                                 | 488                                                                                 |
| Arrive On Green              | 0.09                                                                              | 0.34                                                                              | 0.34                                                                              | 0.06                                                                              | 0.31                                                                              | 0.31                                                                              | 0.16                                                                               | 0.30                                                                                | 0.30                                                                                | 0.07                                                                                | 0.22                                                                                | 0.22                                                                                |
| Sat Flow, veh/h              | 3548                                                                              | 3725                                                                              | 1563                                                                              | 3442                                                                              | 2827                                                                              | 675                                                                               | 3442                                                                               | 2236                                                                                | 1183                                                                                | 3442                                                                                | 3539                                                                                | 1549                                                                                |
| Grp Volume(v), veh/h         | 259                                                                               | 674                                                                               | 311                                                                               | 129                                                                               | 400                                                                               | 393                                                                               | 453                                                                                | 386                                                                                 | 363                                                                                 | 182                                                                                 | 291                                                                                 | 102                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1863                                                                              | 1563                                                                              | 1721                                                                              | 1770                                                                              | 1733                                                                              | 1721                                                                               | 1770                                                                                | 1650                                                                                | 1721                                                                                | 1770                                                                                | 1549                                                                                |
| Q Serve(g_s), s              | 6.6                                                                               | 13.5                                                                              | 15.1                                                                              | 3.4                                                                               | 18.8                                                                              | 18.9                                                                              | 11.9                                                                               | 18.2                                                                                | 18.4                                                                                | 4.8                                                                                 | 6.5                                                                                 | 4.5                                                                                 |
| Cycle Q Clear(g_c), s        | 6.6                                                                               | 13.5                                                                              | 15.1                                                                              | 3.4                                                                               | 18.8                                                                              | 18.9                                                                              | 11.9                                                                               | 18.2                                                                                | 18.4                                                                                | 4.8                                                                                 | 6.5                                                                                 | 4.5                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.39                                                                              | 1.00                                                                               |                                                                                     | 0.72                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 334                                                                               | 1284                                                                              | 539                                                                               | 195                                                                               | 543                                                                               | 532                                                                               | 534                                                                                | 530                                                                                 | 494                                                                                 | 257                                                                                 | 775                                                                                 | 488                                                                                 |
| V/C Ratio(X)                 | 0.78                                                                              | 0.52                                                                              | 0.58                                                                              | 0.66                                                                              | 0.74                                                                              | 0.74                                                                              | 0.85                                                                               | 0.73                                                                                | 0.73                                                                                | 0.71                                                                                | 0.38                                                                                | 0.21                                                                                |
| Avail Cap(c_a), veh/h        | 385                                                                               | 1417                                                                              | 595                                                                               | 255                                                                               | 630                                                                               | 616                                                                               | 621                                                                                | 875                                                                                 | 816                                                                                 | 422                                                                                 | 1521                                                                                | 815                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 41.2                                                                              | 24.4                                                                              | 24.9                                                                              | 43.0                                                                              | 28.9                                                                              | 28.9                                                                              | 38.3                                                                               | 29.2                                                                                | 29.3                                                                                | 42.0                                                                                | 30.9                                                                                | 23.5                                                                                |
| Incr Delay (d2), s/veh       | 8.4                                                                               | 0.3                                                                               | 1.1                                                                               | 4.0                                                                               | 3.8                                                                               | 4.0                                                                               | 9.6                                                                                | 2.0                                                                                 | 2.1                                                                                 | 3.6                                                                                 | 0.3                                                                                 | 0.2                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 3.6                                                                               | 7.0                                                                               | 6.6                                                                               | 1.7                                                                               | 9.8                                                                               | 9.6                                                                               | 6.4                                                                                | 9.2                                                                                 | 8.7                                                                                 | 2.4                                                                                 | 3.2                                                                                 | 2.0                                                                                 |
| LnGrp Delay(d),s/veh         | 49.5                                                                              | 24.7                                                                              | 26.1                                                                              | 47.0                                                                              | 32.7                                                                              | 32.9                                                                              | 47.8                                                                               | 31.2                                                                                | 31.4                                                                                | 45.6                                                                                | 31.2                                                                                | 23.7                                                                                |
| LnGrp LOS                    | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                  | C                                                                                   | C                                                                                   | D                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h          | 1244                                                                              |                                                                                   |                                                                                   |                                                                                   | 922                                                                               |                                                                                   |                                                                                    | 1202                                                                                |                                                                                     |                                                                                     | 575                                                                                 |                                                                                     |
| Approach Delay, s/veh        | 30.2                                                                              |                                                                                   |                                                                                   |                                                                                   | 34.8                                                                              |                                                                                   |                                                                                    | 37.5                                                                                |                                                                                     |                                                                                     | 34.4                                                                                |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 9.7                                                                               | 38.3                                                                              | 18.8                                                                              | 26.3                                                                              | 13.2                                                                              | 34.8                                                                              | 11.4                                                                               | 33.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.4                                                                               | 6.2                                                                               | 4.4                                                                               | 5.9                                                                               | 4.4                                                                               | * 6.2                                                                             | 4.4                                                                                | * 5.9                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 6.9                                                                               | 35.4                                                                              | 16.8                                                                              | 40.0                                                                              | 10.1                                                                              | * 33                                                                              | 11.4                                                                               | * 46                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 5.4                                                                               | 17.1                                                                              | 13.9                                                                              | 8.5                                                                               | 8.6                                                                               | 20.9                                                                              | 6.8                                                                                | 20.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 10.0                                                                              | 0.5                                                                               | 7.7                                                                               | 0.1                                                                               | 7.7                                                                               | 0.2                                                                                | 7.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          | 34.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 8: West Bernardo Dr & Duenda Rd

3/24/2016

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |                                                                                     |  |  |  |
| Traffic Volume (veh/h)       | 21                                                                                | 131                                                                               | 130                                                                               | 73                                                                                | 70                                                                                | 63                                                                                | 66                                                                                  | 147                                                                                 | 90                                                                                  | 106                                                                                 | 201                                                                                 | 12                                                                                  |
| Future Volume (veh/h)        | 21                                                                                | 131                                                                               | 130                                                                               | 73                                                                                | 70                                                                                | 63                                                                                | 66                                                                                  | 147                                                                                 | 90                                                                                  | 106                                                                                 | 201                                                                                 | 12                                                                                  |
| Number                       | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                   | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.98                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.98                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 24                                                                                | 147                                                                               | 146                                                                               | 82                                                                                | 79                                                                                | 71                                                                                | 74                                                                                  | 165                                                                                 | 101                                                                                 | 119                                                                                 | 226                                                                                 | 13                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                   | 2                                                                                   | 0                                                                                   | 1                                                                                   | 2                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 414                                                                               | 198                                                                               | 197                                                                               | 169                                                                               | 177                                                                               | 151                                                                               | 93                                                                                  | 350                                                                                 | 203                                                                                 | 155                                                                                 | 670                                                                                 | 38                                                                                  |
| Arrive On Green              | 0.23                                                                              | 0.23                                                                              | 0.23                                                                              | 0.10                                                                              | 0.10                                                                              | 0.10                                                                              | 0.05                                                                                | 0.16                                                                                | 0.16                                                                                | 0.09                                                                                | 0.20                                                                                | 0.20                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 851                                                                               | 846                                                                               | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                                | 2158                                                                                | 1253                                                                                | 1774                                                                                | 3399                                                                                | 194                                                                                 |
| Grp Volume(v), veh/h         | 24                                                                                | 0                                                                                 | 293                                                                               | 82                                                                                | 79                                                                                | 71                                                                                | 74                                                                                  | 134                                                                                 | 132                                                                                 | 119                                                                                 | 117                                                                                 | 122                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 0                                                                                 | 1697                                                                              | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                                | 1770                                                                                | 1642                                                                                | 1774                                                                                | 1770                                                                                | 1823                                                                                |
| Q Serve(g_s), s              | 0.5                                                                               | 0.0                                                                               | 7.6                                                                               | 2.1                                                                               | 1.9                                                                               | 2.0                                                                               | 2.0                                                                                 | 3.2                                                                                 | 3.5                                                                                 | 3.1                                                                                 | 2.7                                                                                 | 2.7                                                                                 |
| Cycle Q Clear(g_c), s        | 0.5                                                                               | 0.0                                                                               | 7.6                                                                               | 2.1                                                                               | 1.9                                                                               | 2.0                                                                               | 2.0                                                                                 | 3.2                                                                                 | 3.5                                                                                 | 3.1                                                                                 | 2.7                                                                                 | 2.7                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.50                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 0.76                                                                                | 1.00                                                                                |                                                                                     | 0.11                                                                                |
| Lane Grp Cap(c), veh/h       | 414                                                                               | 0                                                                                 | 396                                                                               | 169                                                                               | 177                                                                               | 151                                                                               | 93                                                                                  | 287                                                                                 | 266                                                                                 | 155                                                                                 | 349                                                                                 | 360                                                                                 |
| V/C Ratio(X)                 | 0.06                                                                              | 0.00                                                                              | 0.74                                                                              | 0.49                                                                              | 0.45                                                                              | 0.47                                                                              | 0.79                                                                                | 0.47                                                                                | 0.50                                                                                | 0.77                                                                                | 0.34                                                                                | 0.34                                                                                |
| Avail Cap(c_a), veh/h        | 823                                                                               | 0                                                                                 | 787                                                                               | 674                                                                               | 707                                                                               | 601                                                                               | 337                                                                                 | 672                                                                                 | 623                                                                                 | 449                                                                                 | 784                                                                                 | 808                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 14.1                                                                              | 0.0                                                                               | 16.9                                                                              | 20.3                                                                              | 20.3                                                                              | 20.3                                                                              | 22.2                                                                                | 18.0                                                                                | 18.1                                                                                | 21.2                                                                                | 16.4                                                                                | 16.4                                                                                |
| Incr Delay (d2), s/veh       | 0.1                                                                               | 0.0                                                                               | 2.7                                                                               | 2.2                                                                               | 1.7                                                                               | 2.3                                                                               | 13.9                                                                                | 1.2                                                                                 | 1.4                                                                                 | 7.6                                                                                 | 0.6                                                                                 | 0.6                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.2                                                                               | 0.0                                                                               | 3.8                                                                               | 1.1                                                                               | 1.1                                                                               | 1.0                                                                               | 1.3                                                                                 | 1.7                                                                                 | 1.7                                                                                 | 1.9                                                                                 | 1.4                                                                                 | 1.4                                                                                 |
| LnGrp Delay(d),s/veh         | 14.2                                                                              | 0.0                                                                               | 19.6                                                                              | 22.5                                                                              | 22.0                                                                              | 22.6                                                                              | 36.1                                                                                | 19.2                                                                                | 19.5                                                                                | 28.8                                                                                | 16.9                                                                                | 16.9                                                                                |
| LnGrp LOS                    | B                                                                                 |                                                                                   | B                                                                                 | C                                                                                 | C                                                                                 | C                                                                                 | D                                                                                   | B                                                                                   | B                                                                                   | C                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 317                                                                               |                                                                                   |                                                                                   | 232                                                                               |                                                                                   |                                                                                     | 340                                                                                 |                                                                                     |                                                                                     | 358                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 19.2                                                                              |                                                                                   |                                                                                   | 22.4                                                                              |                                                                                   |                                                                                     | 23.0                                                                                |                                                                                     |                                                                                     | 20.9                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 9.2                                                                               | 12.7                                                                              |                                                                                   | 16.1                                                                              | 7.5                                                                               | 14.3                                                                              |                                                                                     | 9.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |                                                                                     | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 12.0                                                                              | 18.0                                                                              |                                                                                   | 22.0                                                                              | 9.0                                                                               | 21.0                                                                              |                                                                                     | 18.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 5.1                                                                               | 5.5                                                                               |                                                                                   | 9.6                                                                               | 4.0                                                                               | 4.7                                                                               |                                                                                     | 4.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 2.2                                                                               |                                                                                   | 1.5                                                                               | 0.1                                                                               | 2.5                                                                               |                                                                                     | 0.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 21.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 9: West Bernardo Dr & Via Del Campo

3/24/2016

|                              |  |  |  |  |  |  |   |   |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|---|
| Movement                     | EBL                                                                               | EBT                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                               |   |   |
| Lane Configurations          |  |  |  |                                                                                   |  |  |   |   |
| Traffic Volume (veh/h)       | 32                                                                                | 395                                                                               | 426                                                                               | 38                                                                                | 148                                                                               | 346                                                                               |   |   |
| Future Volume (veh/h)        | 32                                                                                | 395                                                                               | 426                                                                               | 38                                                                                | 148                                                                               | 346                                                                               |   |   |
| Number                       | 5                                                                                 | 2                                                                                 | 6                                                                                 | 16                                                                                | 7                                                                                 | 14                                                                                |   |   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |   |   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              |   |   |
| Adj Flow Rate, veh/h         | 37                                                                                | 459                                                                               | 495                                                                               | 44                                                                                | 172                                                                               | 402                                                                               |   |   |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 |   |   |
| Peak Hour Factor             | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              |   |   |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |   |
| Cap, veh/h                   | 50                                                                                | 2056                                                                              | 1633                                                                              | 145                                                                               | 513                                                                               | 458                                                                               |   |   |
| Arrive On Green              | 0.03                                                                              | 0.58                                                                              | 0.50                                                                              | 0.50                                                                              | 0.29                                                                              | 0.29                                                                              |   |   |
| Sat Flow, veh/h              | 1774                                                                              | 3632                                                                              | 3383                                                                              | 292                                                                               | 1774                                                                              | 1583                                                                              |   |   |
| Grp Volume(v), veh/h         | 37                                                                                | 459                                                                               | 266                                                                               | 273                                                                               | 172                                                                               | 402                                                                               |   |   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1770                                                                              | 1811                                                                              | 1774                                                                              | 1583                                                                              |   |   |
| Q Serve(g_s), s              | 1.6                                                                               | 4.9                                                                               | 7.0                                                                               | 7.0                                                                               | 6.0                                                                               | 19.0                                                                              |   |   |
| Cycle Q Clear(g_c), s        | 1.6                                                                               | 4.9                                                                               | 7.0                                                                               | 7.0                                                                               | 6.0                                                                               | 19.0                                                                              |   |   |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   | 0.16                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Lane Grp Cap(c), veh/h       | 50                                                                                | 2056                                                                              | 878                                                                               | 899                                                                               | 513                                                                               | 458                                                                               |   |   |
| V/C Ratio(X)                 | 0.74                                                                              | 0.22                                                                              | 0.30                                                                              | 0.30                                                                              | 0.34                                                                              | 0.88                                                                              |   |   |
| Avail Cap(c_a), veh/h        | 263                                                                               | 2056                                                                              | 878                                                                               | 899                                                                               | 777                                                                               | 693                                                                               |   |   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Uniform Delay (d), s/veh     | 37.8                                                                              | 7.9                                                                               | 11.7                                                                              | 11.7                                                                              | 21.9                                                                              | 26.5                                                                              |   |   |
| Incr Delay (d2), s/veh       | 18.9                                                                              | 0.3                                                                               | 0.9                                                                               | 0.9                                                                               | 0.4                                                                               | 8.4                                                                               |   |   |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |   |
| %ile BackOfQ(50%),veh/ln     | 1.1                                                                               | 2.4                                                                               | 3.6                                                                               | 3.7                                                                               | 3.0                                                                               | 16.0                                                                              |   |   |
| LnGrp Delay(d),s/veh         | 56.7                                                                              | 8.2                                                                               | 12.6                                                                              | 12.6                                                                              | 22.3                                                                              | 35.0                                                                              |   |   |
| LnGrp LOS                    | E                                                                                 | A                                                                                 | B                                                                                 | B                                                                                 | C                                                                                 | C                                                                                 |   |   |
| Approach Vol, veh/h          |                                                                                   | 496                                                                               | 539                                                                               |                                                                                   | 574                                                                               |                                                                                   |   |   |
| Approach Delay, s/veh        |                                                                                   | 11.8                                                                              | 12.6                                                                              |                                                                                   | 31.2                                                                              |                                                                                   |   |   |
| Approach LOS                 |                                                                                   | B                                                                                 | B                                                                                 |                                                                                   | C                                                                                 |                                                                                   |   |   |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8 |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |   |   |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 51.0                                                                              |                                                                                   | 27.3                                                                              | 6.6                                                                               | 44.4                                                                              |   |   |
| Change Period (Y+Rc), s      |                                                                                   | 5.5                                                                               |                                                                                   | * 4.7                                                                             | 4.4                                                                               | 5.5                                                                               |   |   |
| Max Green Setting (Gmax), s  |                                                                                   | 45.5                                                                              |                                                                                   | * 34                                                                              | 11.6                                                                              | 29.5                                                                              |   |   |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 6.9                                                                               |                                                                                   | 21.0                                                                              | 3.6                                                                               | 9.0                                                                               |   |   |
| Green Ext Time (p_c), s      |                                                                                   | 7.0                                                                               |                                                                                   | 1.7                                                                               | 0.0                                                                               | 6.0                                                                               |   |   |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 19.0                                                                              |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |   |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |



# HCM 2010 Signalized Intersection Summary

## 10: Bernardo Center Dr & West Bernardo Dr

3/24/2016

|                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|
|                              |  |  |  |  |  |  |  |      |
| Movement                     | EBL                                                                               | EBT                                                                               | WBU                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                                 |      |
| Lane Configurations          |  |  |  |  |  |  |  |      |
| Traffic Volume (veh/h)       | 408                                                                               | 385                                                                               | 0                                                                                 | 369                                                                               | 349                                                                               | 329                                                                               | 469                                                                                 |      |
| Future Volume (veh/h)        | 408                                                                               | 385                                                                               | 0                                                                                 | 369                                                                               | 349                                                                               | 329                                                                               | 469                                                                                 |      |
| Number                       | 1                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 12                                                                                | 3                                                                                 | 18                                                                                  |      |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   |      |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              |                                                                                   | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                                |      |
| Adj Flow Rate, veh/h         | 434                                                                               | 410                                                                               |                                                                                   | 393                                                                               | 371                                                                               | 350                                                                               | 499                                                                                 |      |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                   |      |
| Peak Hour Factor             | 0.94                                                                              | 0.94                                                                              |                                                                                   | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                                |      |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   |      |
| Cap, veh/h                   | 579                                                                               | 1937                                                                              |                                                                                   | 588                                                                               | 1742                                                                              | 550                                                                               | 757                                                                                 |      |
| Arrive On Green              | 0.17                                                                              | 0.55                                                                              |                                                                                   | 0.32                                                                              | 0.32                                                                              | 0.31                                                                              | 0.31                                                                                |      |
| Sat Flow, veh/h              | 3442                                                                              | 3632                                                                              |                                                                                   | 1863                                                                              | 2782                                                                              | 1774                                                                              | 1583                                                                                |      |
| Grp Volume(v), veh/h         | 434                                                                               | 410                                                                               |                                                                                   | 393                                                                               | 371                                                                               | 350                                                                               | 499                                                                                 |      |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1770                                                                              |                                                                                   | 1863                                                                              | 1391                                                                              | 1774                                                                              | 1583                                                                                |      |
| Q Serve(g_s), s              | 8.3                                                                               | 4.1                                                                               |                                                                                   | 12.7                                                                              | 4.0                                                                               | 11.8                                                                              | 16.6                                                                                |      |
| Cycle Q Clear(g_c), s        | 8.3                                                                               | 4.1                                                                               |                                                                                   | 12.7                                                                              | 4.0                                                                               | 11.8                                                                              | 16.6                                                                                |      |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Lane Grp Cap(c), veh/h       | 579                                                                               | 1937                                                                              |                                                                                   | 588                                                                               | 1742                                                                              | 550                                                                               | 757                                                                                 |      |
| V/C Ratio(X)                 | 0.75                                                                              | 0.21                                                                              |                                                                                   | 0.67                                                                              | 0.21                                                                              | 0.64                                                                              | 0.66                                                                                |      |
| Avail Cap(c_a), veh/h        | 1271                                                                              | 3303                                                                              |                                                                                   | 1142                                                                              | 2569                                                                              | 962                                                                               | 1125                                                                                |      |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Uniform Delay (d), s/veh     | 27.4                                                                              | 8.0                                                                               |                                                                                   | 20.6                                                                              | 5.6                                                                               | 20.6                                                                              | 13.8                                                                                |      |
| Incr Delay (d2), s/veh       | 2.0                                                                               | 0.1                                                                               |                                                                                   | 1.3                                                                               | 0.1                                                                               | 1.2                                                                               | 1.0                                                                                 |      |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 |      |
| %ile BackOfQ(50%),veh/ln     | 4.1                                                                               | 2.0                                                                               |                                                                                   | 6.7                                                                               | 1.5                                                                               | 5.9                                                                               | 7.4                                                                                 |      |
| LnGrp Delay(d),s/veh         | 29.4                                                                              | 8.1                                                                               |                                                                                   | 21.9                                                                              | 5.7                                                                               | 21.8                                                                              | 14.8                                                                                |      |
| LnGrp LOS                    | C                                                                                 | A                                                                                 |                                                                                   | C                                                                                 | A                                                                                 | C                                                                                 | B                                                                                   |      |
| Approach Vol, veh/h          |                                                                                   | 844                                                                               |                                                                                   | 764                                                                               |                                                                                   | 849                                                                               |                                                                                     |      |
| Approach Delay, s/veh        |                                                                                   | 19.1                                                                              |                                                                                   | 14.0                                                                              |                                                                                   | 17.7                                                                              |                                                                                     |      |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   | B                                                                                 |                                                                                   | B                                                                                 |                                                                                     |      |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8    |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                     | 8    |
| Phs Duration (G+Y+Rc), s     | 16.1                                                                              | 27.4                                                                              |                                                                                   |                                                                                   |                                                                                   | 43.4                                                                              |                                                                                     | 25.9 |
| Change Period (Y+Rc), s      | 4.4                                                                               | 5.5                                                                               |                                                                                   |                                                                                   |                                                                                   | * 5.5                                                                             |                                                                                     | 4.4  |
| Max Green Setting (Gmax), s  | 25.6                                                                              | 42.5                                                                              |                                                                                   |                                                                                   |                                                                                   | * 65                                                                              |                                                                                     | 37.6 |
| Max Q Clear Time (g_c+I1), s | 10.3                                                                              | 14.7                                                                              |                                                                                   |                                                                                   |                                                                                   | 6.1                                                                               |                                                                                     | 18.6 |
| Green Ext Time (p_c), s      | 1.3                                                                               | 7.1                                                                               |                                                                                   |                                                                                   |                                                                                   | 7.8                                                                               |                                                                                     | 2.8  |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 17.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |

## **APPENDIX D**

### **SANDAG SELECT ZONE ASSIGNMENT & YEAR 2035 TRAFFIC VOLUMES AND LAND USE DATA**



SANDAG  
Series 11 2030re

Select Zone Plot  
TAZ 1471

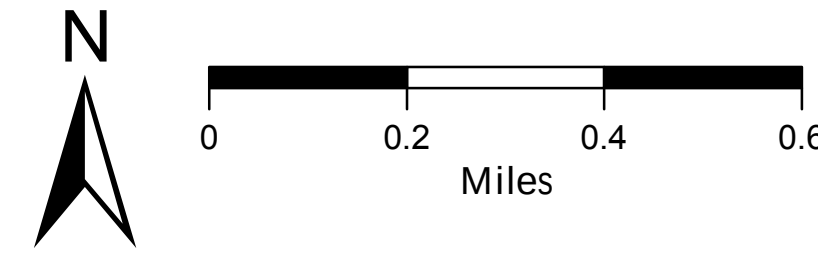
 Traffic Analysis Zones

# Selz Volumes & Percentage

# Unadjusted ADT(x1000)

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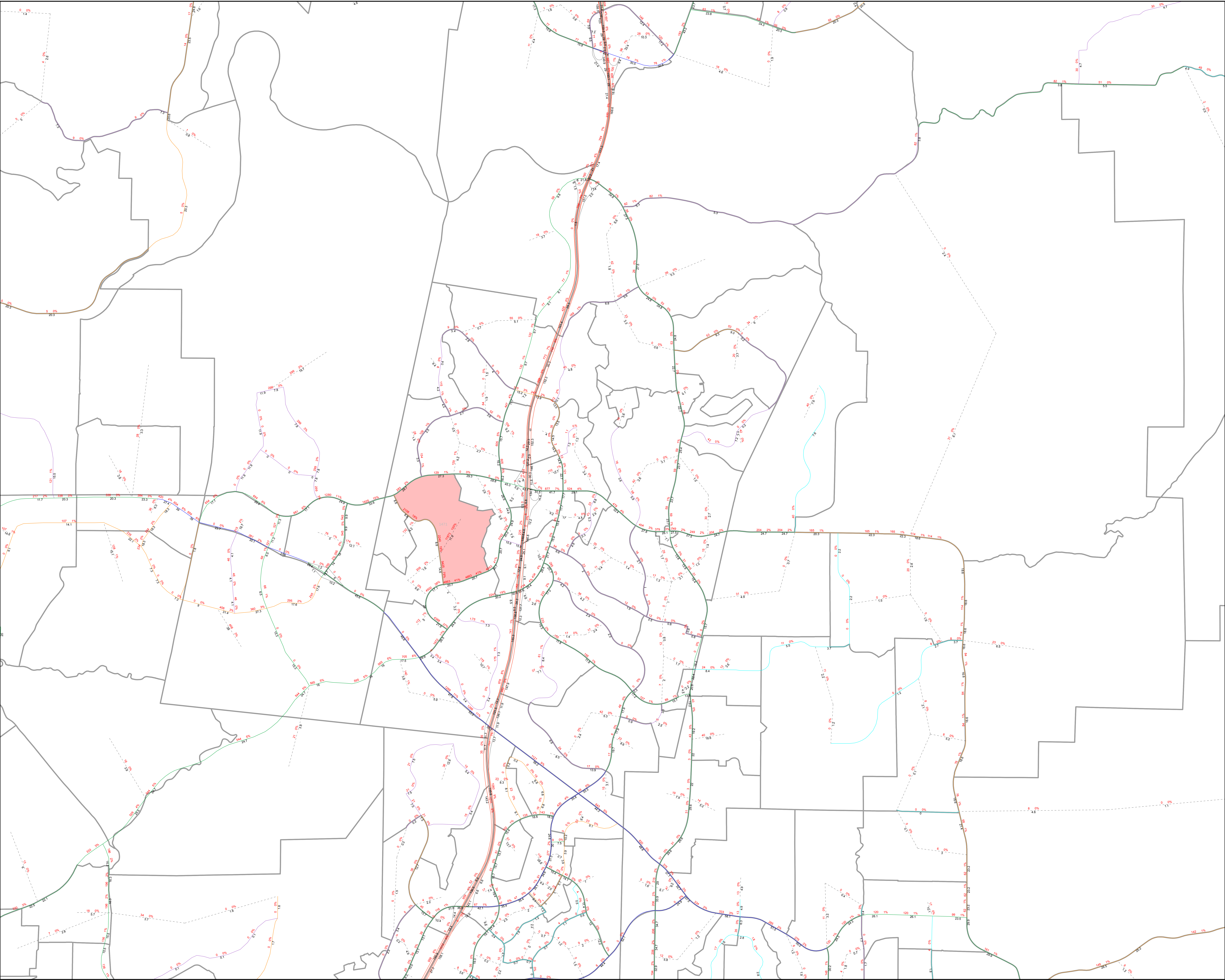
SAN DIEGO ASSOCIATION OF GOVERNMENTS  
401 B STREET, SUITE 800  
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(619) 699-1900  
E-mail: sandag@sandag.org  
Web site: www.sandag.org



**SANDAG**

 servicebureau

Date: August 9, 2012







## Final 2050 Regional Transportation Plan

San Diego Regional Traffic Forecast Information Center

Trip Generation and Land Use by Zone - Year: 2035

Traffic Analysis Zone: 1,575

| Land Use Code        | Description             | Type | Amount | Person Trips | Vehicle Trips |
|----------------------|-------------------------|------|--------|--------------|---------------|
| 1501                 | LOW-RISE HOTEL OR MOTEL | acre | 3.7    | 1,381        | 863           |
| 2101                 | INDUSTRIAL PARK         | acre | 21.3   | 3,203        | 2,645         |
| 2103                 | LIGHT INDUSTRY          | acre | 0      | 0            | 0             |
| 4112                 | RIGHT-OF-WAY            | acre | 14.9   | 0            | 0             |
| 5008                 | SERVICE STATION         | acre | 0      | 0            | 0             |
| 6002                 | LOW RISE OFFICE         | acre | 61.2   | 18,475       | 14,271        |
| 6509                 | OTHER HEALTH CARE       | acre | 5      | 2,326        | 1,717         |
| 9101                 | INACTIVE USE            | acre | 27     | 0            | 0             |
| TOTAL                |                         |      |        | 25,385       | 19,496        |
| LOADED VEHICLE TRIPS |                         |      |        |              | 19,481        |

**Disclaimer:** Reported person and vehicle trips are only estimates. The difference between estimated and loaded vehicle trips can be attributed to regional trip balancing, the mode choice model, and / or intrazonal trips.

Source: San Diego Association of Governments Traffic Forecast, October 2011

## **APPENDIX E**

### **PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS OPENING DAY WITHOUT PROJECT**

# HCM 2010 Signalized Intersection Summary

## 1: Camino San Bernardo & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 0                                                                                 | 907                                                                               | 171                                                                               | 401                                                                               | 721                                                                               | 1                                                                                 | 37                                                                                 | 0                                                                                   | 178                                                                                 | 4                                                                                   | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 0                                                                                 | 907                                                                               | 171                                                                               | 401                                                                               | 721                                                                               | 1                                                                                 | 37                                                                                 | 0                                                                                   | 178                                                                                 | 4                                                                                   | 0                                                                                   | 0                                                                                   |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.98                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.98                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 986                                                                               | 186                                                                               | 436                                                                               | 784                                                                               | 1                                                                                 | 40                                                                                 | 0                                                                                   | 193                                                                                 | 4                                                                                   | 0                                                                                   | 0                                                                                   |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                  | 2                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 3                                                                                 | 1272                                                                              | 240                                                                               | 551                                                                               | 2392                                                                              | 3                                                                                 | 395                                                                                | 300                                                                                 | 264                                                                                 | 173                                                                                 | 0                                                                                   | 0                                                                                   |
| Arrive On Green              | 0.00                                                                              | 0.43                                                                              | 0.43                                                                              | 0.16                                                                              | 0.66                                                                              | 0.66                                                                              | 0.17                                                                               | 0.00                                                                                | 0.17                                                                                | 0.17                                                                                | 0.00                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 2965                                                                              | 558                                                                               | 3442                                                                              | 3627                                                                              | 5                                                                                 | 1412                                                                               | 1770                                                                                | 1557                                                                                | 362                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Volume(v), veh/h         | 0                                                                                 | 588                                                                               | 584                                                                               | 436                                                                               | 383                                                                               | 402                                                                               | 40                                                                                 | 0                                                                                   | 193                                                                                 | 4                                                                                   | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1754                                                                              | 1721                                                                              | 1770                                                                              | 1862                                                                              | 1412                                                                               | 1770                                                                                | 1557                                                                                | 362                                                                                 | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.0                                                                               | 18.2                                                                              | 18.3                                                                              | 7.8                                                                               | 6.0                                                                               | 6.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 7.5                                                                                 | 0.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 18.2                                                                              | 18.3                                                                              | 7.8                                                                               | 6.0                                                                               | 6.0                                                                               | 1.2                                                                                | 0.0                                                                                 | 7.5                                                                                 | 7.8                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.32                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.00                                                                                |
| Lane Grp Cap(c), veh/h       | 3                                                                                 | 759                                                                               | 753                                                                               | 551                                                                               | 1167                                                                              | 1228                                                                              | 395                                                                                | 300                                                                                 | 264                                                                                 | 173                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.00                                                                              | 0.77                                                                              | 0.78                                                                              | 0.79                                                                              | 0.33                                                                              | 0.33                                                                              | 0.10                                                                               | 0.00                                                                                | 0.73                                                                                | 0.02                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 138                                                                               | 904                                                                               | 896                                                                               | 681                                                                               | 1167                                                                              | 1228                                                                              | 793                                                                                | 799                                                                                 | 703                                                                                 | 508                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 15.7                                                                              | 15.7                                                                              | 25.9                                                                              | 4.8                                                                               | 4.8                                                                               | 22.7                                                                               | 0.0                                                                                 | 25.3                                                                                | 29.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 3.6                                                                               | 3.6                                                                               | 5.1                                                                               | 0.2                                                                               | 0.2                                                                               | 0.1                                                                                | 0.0                                                                                 | 3.9                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 9.6                                                                               | 9.5                                                                               | 4.1                                                                               | 2.9                                                                               | 3.1                                                                               | 0.6                                                                                | 0.0                                                                                 | 3.5                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 19.2                                                                              | 19.3                                                                              | 31.0                                                                              | 4.9                                                                               | 4.9                                                                               | 22.8                                                                               | 0.0                                                                                 | 29.2                                                                                | 29.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    |                                                                                   | B                                                                                 | B                                                                                 | C                                                                                 | A                                                                                 | A                                                                                 | C                                                                                  |                                                                                     | C                                                                                   | C                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1172                                                                              |                                                                                   |                                                                                   | 1221                                                                              |                                                                                   |                                                                                    | 233                                                                                 |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 19.3                                                                              |                                                                                   |                                                                                   | 14.2                                                                              |                                                                                   |                                                                                    | 28.1                                                                                |                                                                                     |                                                                                     | 29.0                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 14.8                                                                              | 33.6                                                                              |                                                                                   | 15.9                                                                              | 0.0                                                                               | 48.4                                                                              |                                                                                    | 15.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 6.0                                                                               |                                                                                   | 5.0                                                                               | 4.5                                                                               | 6.0                                                                               |                                                                                    | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 12.7                                                                              | 32.8                                                                              |                                                                                   | 29.0                                                                              | 5.0                                                                               | 40.5                                                                              |                                                                                    | 29.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 9.8                                                                               | 20.3                                                                              |                                                                                   | 9.8                                                                               | 0.0                                                                               | 8.0                                                                               |                                                                                    | 9.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.5                                                                               | 7.2                                                                               |                                                                                   | 1.1                                                                               | 0.0                                                                               | 15.0                                                                              |                                                                                    | 1.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 17.7                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 2: Via Del Campo & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 4                                                                                 | 900                                                                               | 302                                                                               | 596                                                                               | 1238                                                                              | 0                                                                                 | 59                                                                                 | 0                                                                                   | 17                                                                                  | 1                                                                                   | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 4                                                                                 | 900                                                                               | 302                                                                               | 596                                                                               | 1238                                                                              | 0                                                                                 | 59                                                                                 | 0                                                                                   | 17                                                                                  | 1                                                                                   | 0                                                                                   | 0                                                                                   |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.98                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.98                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1900                                                                               | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 4                                                                                 | 1011                                                                              | 339                                                                               | 670                                                                               | 1391                                                                              | 0                                                                                 | 66                                                                                 | 0                                                                                   | 19                                                                                  | 1                                                                                   | 0                                                                                   | 0                                                                                   |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 0                                                                                  | 1                                                                                   | 1                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                               | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 7                                                                                 | 1076                                                                              | 357                                                                               | 645                                                                               | 2740                                                                              | 0                                                                                 | 172                                                                                | 0                                                                                   | 92                                                                                  | 107                                                                                 | 0                                                                                   | 0                                                                                   |
| Arrive On Green              | 0.00                                                                              | 0.41                                                                              | 0.41                                                                              | 0.36                                                                              | 0.77                                                                              | 0.00                                                                              | 0.06                                                                               | 0.00                                                                                | 0.06                                                                                | 0.06                                                                                | 0.00                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 2595                                                                              | 862                                                                               | 1774                                                                              | 3632                                                                              | 0                                                                                 | 1635                                                                               | 0                                                                                   | 1558                                                                                | 526                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Volume(v), veh/h         | 4                                                                                 | 686                                                                               | 664                                                                               | 670                                                                               | 1391                                                                              | 0                                                                                 | 66                                                                                 | 0                                                                                   | 19                                                                                  | 1                                                                                   | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1687                                                                              | 1774                                                                              | 1770                                                                              | 0                                                                                 | 1635                                                                               | 0                                                                                   | 1558                                                                                | 526                                                                                 | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.2                                                                               | 35.3                                                                              | 36.1                                                                              | 34.6                                                                              | 13.9                                                                              | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 1.1                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.2                                                                               | 35.3                                                                              | 36.1                                                                              | 34.6                                                                              | 13.9                                                                              | 0.0                                                                               | 3.5                                                                                | 0.0                                                                                 | 1.1                                                                                 | 3.5                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.51                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.00                                                                                |
| Lane Grp Cap(c), veh/h       | 7                                                                                 | 734                                                                               | 699                                                                               | 645                                                                               | 2740                                                                              | 0                                                                                 | 172                                                                                | 0                                                                                   | 92                                                                                  | 107                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.53                                                                              | 0.94                                                                              | 0.95                                                                              | 1.04                                                                              | 0.51                                                                              | 0.00                                                                              | 0.38                                                                               | 0.00                                                                                | 0.21                                                                                | 0.01                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 75                                                                                | 761                                                                               | 725                                                                               | 645                                                                               | 2740                                                                              | 0                                                                                 | 518                                                                                | 0                                                                                   | 475                                                                                 | 452                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 47.3                                                                              | 26.6                                                                              | 26.9                                                                              | 30.3                                                                              | 4.0                                                                               | 0.0                                                                               | 43.8                                                                               | 0.0                                                                                 | 42.7                                                                                | 45.5                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 48.5                                                                              | 18.4                                                                              | 21.4                                                                              | 45.8                                                                              | 0.2                                                                               | 0.0                                                                               | 1.4                                                                                | 0.0                                                                                 | 1.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.2                                                                               | 20.9                                                                              | 20.9                                                                              | 25.0                                                                              | 6.6                                                                               | 0.0                                                                               | 1.8                                                                                | 0.0                                                                                 | 0.5                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 95.8                                                                              | 45.0                                                                              | 48.3                                                                              | 76.0                                                                              | 4.2                                                                               | 0.0                                                                               | 45.2                                                                               | 0.0                                                                                 | 43.8                                                                                | 45.5                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | F                                                                                 | D                                                                                 | D                                                                                 | F                                                                                 | A                                                                                 |                                                                                   | D                                                                                  |                                                                                     | D                                                                                   | D                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1354                                                                              |                                                                                   |                                                                                   | 2061                                                                              |                                                                                   |                                                                                    | 85                                                                                  |                                                                                     |                                                                                     | 1                                                                                   |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 46.8                                                                              |                                                                                   |                                                                                   | 27.5                                                                              |                                                                                   |                                                                                    | 44.9                                                                                |                                                                                     |                                                                                     | 45.5                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 39.0                                                                              | 45.3                                                                              |                                                                                   | 10.8                                                                              | 4.8                                                                               | 79.5                                                                              |                                                                                    | 10.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.4                                                                               | 5.9                                                                               |                                                                                   | * 5.2                                                                             | 4.4                                                                               | * 5.9                                                                             |                                                                                    | 5.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 34.6                                                                              | 40.9                                                                              |                                                                                   | * 29                                                                              | 4.0                                                                               | * 72                                                                              |                                                                                    | 29.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 36.6                                                                              | 38.1                                                                              |                                                                                   | 5.5                                                                               | 2.2                                                                               | 15.9                                                                              |                                                                                    | 5.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 1.3                                                                               |                                                                                   | 0.3                                                                               | 0.0                                                                               | 34.8                                                                              |                                                                                    | 0.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 35.4                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# HCM 2010 Signalized Intersection Summary

## 3: Project Dwy/Matinal Rd & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 33                                                                                | 784                                                                               | 0                                                                                 | 0                                                                                 | 1602                                                                              | 17                                                                                | 0                                                                                  | 0                                                                                   | 0                                                                                   | 84                                                                                  | 0                                                                                   | 141                                                                                 |
| Future Volume (veh/h)        | 33                                                                                | 784                                                                               | 0                                                                                 | 0                                                                                 | 1602                                                                              | 17                                                                                | 0                                                                                  | 0                                                                                   | 0                                                                                   | 84                                                                                  | 0                                                                                   | 141                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.98                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 38                                                                                | 901                                                                               | 0                                                                                 | 0                                                                                 | 1841                                                                              | 20                                                                                | 0                                                                                  | 0                                                                                   | 0                                                                                   | 97                                                                                  | 0                                                                                   | 162                                                                                 |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                  | 1                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.87                                                                              | 0.87                                                                              | 0.87                                                                              | 0.87                                                                              | 0.87                                                                              | 0.87                                                                              | 0.87                                                                               | 0.87                                                                                | 0.87                                                                                | 0.87                                                                                | 0.87                                                                                | 0.87                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 48                                                                                | 2456                                                                              | 0                                                                                 | 2                                                                                 | 2255                                                                              | 24                                                                                | 69                                                                                 | 363                                                                                 | 0                                                                                   | 147                                                                                 | 11                                                                                  | 185                                                                                 |
| Arrive On Green              | 0.03                                                                              | 0.69                                                                              | 0.00                                                                              | 0.00                                                                              | 0.63                                                                              | 0.63                                                                              | 0.00                                                                               | 0.00                                                                                | 0.00                                                                                | 0.19                                                                                | 0.00                                                                                | 0.19                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 3632                                                                              | 0                                                                                 | 1774                                                                              | 3587                                                                              | 39                                                                                | 1219                                                                               | 1863                                                                                | 0                                                                                   | 509                                                                                 | 58                                                                                  | 948                                                                                 |
| Grp Volume(v), veh/h         | 38                                                                                | 901                                                                               | 0                                                                                 | 0                                                                                 | 907                                                                               | 954                                                                               | 0                                                                                  | 0                                                                                   | 0                                                                                   | 259                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 0                                                                                 | 1774                                                                              | 1770                                                                              | 1856                                                                              | 1219                                                                               | 1863                                                                                | 0                                                                                   | 1515                                                                                | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 2.2                                                                               | 10.9                                                                              | 0.0                                                                               | 0.0                                                                               | 40.8                                                                              | 41.1                                                                              | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 15.4                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 2.2                                                                               | 10.9                                                                              | 0.0                                                                               | 0.0                                                                               | 40.8                                                                              | 41.1                                                                              | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 17.3                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                              |                                                                                   | 0.02                                                                              | 1.00                                                                               |                                                                                     | 0.00                                                                                | 0.37                                                                                |                                                                                     | 0.63                                                                                |
| Lane Grp Cap(c), veh/h       | 48                                                                                | 2456                                                                              | 0                                                                                 | 2                                                                                 | 1113                                                                              | 1167                                                                              | 69                                                                                 | 363                                                                                 | 0                                                                                   | 343                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.79                                                                              | 0.37                                                                              | 0.00                                                                              | 0.00                                                                              | 0.82                                                                              | 0.82                                                                              | 0.00                                                                               | 0.00                                                                                | 0.00                                                                                | 0.76                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 68                                                                                | 2456                                                                              | 0                                                                                 | 68                                                                                | 1231                                                                              | 1291                                                                              | 173                                                                                | 522                                                                                 | 0                                                                                   | 462                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                               | 0.00                                                                                | 0.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 50.6                                                                              | 6.6                                                                               | 0.0                                                                               | 0.0                                                                               | 14.8                                                                              | 14.8                                                                              | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 40.8                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 32.9                                                                              | 0.1                                                                               | 0.0                                                                               | 0.0                                                                               | 4.0                                                                               | 3.9                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 4.8                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 1.5                                                                               | 5.3                                                                               | 0.0                                                                               | 0.0                                                                               | 20.9                                                                              | 21.9                                                                              | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 7.7                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 83.5                                                                              | 6.7                                                                               | 0.0                                                                               | 0.0                                                                               | 18.8                                                                              | 18.7                                                                              | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 45.6                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | F                                                                                 | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 | B                                                                                 |                                                                                    |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 939                                                                               |                                                                                   |                                                                                   | 1861                                                                              |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 259                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 9.8                                                                               |                                                                                   |                                                                                   | 18.7                                                                              |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 45.6                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 0.0                                                                               | 79.6                                                                              |                                                                                   | 25.0                                                                              | 6.8                                                                               | 72.7                                                                              |                                                                                    | 25.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 7.0                                                                               |                                                                                   | 4.6                                                                               | 4.0                                                                               | * 7                                                                               |                                                                                    | * 4.6                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 4.0                                                                               | 71.7                                                                              |                                                                                   | 28.7                                                                              | 4.0                                                                               | * 73                                                                              |                                                                                    | * 29                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 0.0                                                                               | 12.9                                                                              |                                                                                   | 19.3                                                                              | 4.2                                                                               | 43.1                                                                              |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 37.3                                                                              |                                                                                   | 1.1                                                                               | 0.0                                                                               | 22.7                                                                              |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 18.3                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 4: West Bernardo Dr & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 42                                                                                | 635                                                                               | 76                                                                                | 566                                                                               | 1483                                                                              | 271                                                                               | 110                                                                                | 86                                                                                  | 124                                                                                 | 643                                                                                 | 312                                                                                 | 164                                                                                 |
| Future Volume (veh/h)        | 42                                                                                | 635                                                                               | 76                                                                                | 566                                                                               | 1483                                                                              | 271                                                                               | 110                                                                                | 86                                                                                  | 124                                                                                 | 643                                                                                 | 312                                                                                 | 164                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                               |                                                                                     | 0.99                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                               | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 43                                                                                | 655                                                                               | 78                                                                                | 584                                                                               | 1529                                                                              | 279                                                                               | 113                                                                                | 89                                                                                  | 128                                                                                 | 663                                                                                 | 322                                                                                 | 169                                                                                 |
| Adj No. of Lanes             | 2                                                                                 | 3                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 | 1                                                                                 | 2                                                                                  | 2                                                                                   | 1                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                               | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 94                                                                                | 916                                                                               | 108                                                                               | 902                                                                               | 1585                                                                              | 700                                                                               | 188                                                                                | 393                                                                                 | 588                                                                                 | 765                                                                                 | 630                                                                                 | 323                                                                                 |
| Arrive On Green              | 0.03                                                                              | 0.20                                                                              | 0.20                                                                              | 0.26                                                                              | 0.45                                                                              | 0.45                                                                              | 0.05                                                                               | 0.11                                                                                | 0.11                                                                                | 0.22                                                                                | 0.28                                                                                | 0.28                                                                                |
| Sat Flow, veh/h              | 3442                                                                              | 4613                                                                              | 544                                                                               | 3442                                                                              | 3539                                                                              | 1562                                                                              | 3442                                                                               | 3539                                                                                | 1561                                                                                | 3442                                                                                | 2261                                                                                | 1161                                                                                |
| Grp Volume(v), veh/h         | 43                                                                                | 480                                                                               | 253                                                                               | 584                                                                               | 1529                                                                              | 279                                                                               | 113                                                                                | 89                                                                                  | 128                                                                                 | 663                                                                                 | 250                                                                                 | 241                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1695                                                                              | 1767                                                                              | 1721                                                                              | 1770                                                                              | 1562                                                                              | 1721                                                                               | 1770                                                                                | 1561                                                                                | 1721                                                                                | 1770                                                                                | 1652                                                                                |
| Q Serve(g_s), s              | 1.3                                                                               | 13.7                                                                              | 13.9                                                                              | 15.7                                                                              | 43.6                                                                              | 12.5                                                                              | 3.3                                                                                | 2.4                                                                                 | 2.5                                                                                 | 19.3                                                                                | 12.4                                                                                | 12.8                                                                                |
| Cycle Q Clear(g_c), s        | 1.3                                                                               | 13.7                                                                              | 13.9                                                                              | 15.7                                                                              | 43.6                                                                              | 12.5                                                                              | 3.3                                                                                | 2.4                                                                                 | 2.5                                                                                 | 19.3                                                                                | 12.4                                                                                | 12.8                                                                                |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.31                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.70                                                                                |
| Lane Grp Cap(c), veh/h       | 94                                                                                | 673                                                                               | 351                                                                               | 902                                                                               | 1585                                                                              | 700                                                                               | 188                                                                                | 393                                                                                 | 588                                                                                 | 765                                                                                 | 493                                                                                 | 460                                                                                 |
| V/C Ratio(X)                 | 0.46                                                                              | 0.71                                                                              | 0.72                                                                              | 0.65                                                                              | 0.96                                                                              | 0.40                                                                              | 0.60                                                                               | 0.23                                                                                | 0.22                                                                                | 0.87                                                                                | 0.51                                                                                | 0.52                                                                                |
| Avail Cap(c_a), veh/h        | 132                                                                               | 1145                                                                              | 597                                                                               | 902                                                                               | 1597                                                                              | 705                                                                               | 1129                                                                               | 1332                                                                                | 1002                                                                                | 997                                                                                 | 598                                                                                 | 558                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 49.8                                                                              | 38.9                                                                              | 39.0                                                                              | 34.1                                                                              | 27.9                                                                              | 19.3                                                                              | 48.0                                                                               | 42.1                                                                                | 7.7                                                                                 | 38.9                                                                                | 31.5                                                                                | 31.7                                                                                |
| Incr Delay (d2), s/veh       | 3.4                                                                               | 1.4                                                                               | 2.8                                                                               | 1.6                                                                               | 14.9                                                                              | 0.4                                                                               | 3.0                                                                                | 0.3                                                                                 | 0.2                                                                                 | 6.6                                                                                 | 0.8                                                                                 | 0.9                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.7                                                                               | 6.5                                                                               | 7.1                                                                               | 7.7                                                                               | 24.5                                                                              | 5.4                                                                               | 1.7                                                                                | 1.2                                                                                 | 1.3                                                                                 | 9.8                                                                                 | 6.2                                                                                 | 5.9                                                                                 |
| LnGrp Delay(d),s/veh         | 53.2                                                                              | 40.3                                                                              | 41.8                                                                              | 35.7                                                                              | 42.8                                                                              | 19.7                                                                              | 51.1                                                                               | 42.4                                                                                | 7.8                                                                                 | 45.5                                                                                | 32.3                                                                                | 32.6                                                                                |
| LnGrp LOS                    | D                                                                                 | D                                                                                 | D                                                                                 | D                                                                                 | D                                                                                 | B                                                                                 | D                                                                                  | D                                                                                   | A                                                                                   | D                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 776                                                                               |                                                                                   |                                                                                   | 2392                                                                              |                                                                                   |                                                                                    | 330                                                                                 |                                                                                     |                                                                                     | 1154                                                                                |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 41.5                                                                              |                                                                                   |                                                                                   | 38.4                                                                              |                                                                                   |                                                                                    | 32.0                                                                                |                                                                                     |                                                                                     | 39.9                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 32.9                                                                              | 26.5                                                                              | 10.1                                                                              | 34.4                                                                              | 7.2                                                                               | 52.2                                                                              | 27.5                                                                               | 16.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.7                                                                               | * 5.9                                                                             | 4.4                                                                               | 5.4                                                                               | 4.4                                                                               | 5.7                                                                               | 4.4                                                                                | 5.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 15.6                                                                              | * 35                                                                              | 34.1                                                                              | 35.1                                                                              | 4.0                                                                               | 46.9                                                                              | 30.1                                                                               | 39.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 17.7                                                                              | 15.9                                                                              | 5.3                                                                               | 14.8                                                                              | 3.3                                                                               | 45.6                                                                              | 21.3                                                                               | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 4.7                                                                               | 0.4                                                                               | 4.0                                                                               | 0.0                                                                               | 0.9                                                                               | 1.8                                                                                | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 38.8                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 5: I-15 SB Ramps & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |   |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                                | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |                                                                                     |  |                                                                                     |  |
| Traffic Volume (veh/h)       | 0                                                                                 | 771                                                                               | 573                                                                               | 0                                                                                 | 1246                                                                              | 505                                                                                | 0                                                                                   | 0                                                                                   | 0                                                                                   | 659                                                                                 | 0                                                                                   | 1119                                                                                |
| Future Volume (veh/h)        | 0                                                                                 | 771                                                                               | 573                                                                               | 0                                                                                 | 1246                                                                              | 505                                                                                | 0                                                                                   | 0                                                                                   | 0                                                                                   | 659                                                                                 | 0                                                                                   | 1119                                                                                |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                 |                                                                                     |                                                                                     |                                                                                     | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  |                                                                                     |                                                                                     |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                               |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 0                                                                                 | 1863                                                                              | 1863                                                                              | 0                                                                                 | 1863                                                                              | 1863                                                                               |                                                                                     |                                                                                     |                                                                                     | 1863                                                                                | 0                                                                                   | 1863                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 791                                                                               | 617                                                                               | 0                                                                                 | 1312                                                                              | 0                                                                                  |                                                                                     |                                                                                     |                                                                                     | 694                                                                                 | 0                                                                                   | 1178                                                                                |
| Adj No. of Lanes             | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 3                                                                                 | 1                                                                                  |                                                                                     |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 2                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.95                                                                              | 0.95                                                                              | 0.92                                                                              | 0.95                                                                              | 0.95                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.95                                                                                | 0.92                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %         | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                  |                                                                                     |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 0                                                                                 | 1666                                                                              | 1416                                                                              | 0                                                                                 | 2499                                                                              | 708                                                                                |                                                                                     |                                                                                     |                                                                                     | 1595                                                                                | 0                                                                                   | 1292                                                                                |
| Arrive On Green              | 0.00                                                                              | 0.45                                                                              | 0.45                                                                              | 0.00                                                                              | 0.59                                                                              | 0.00                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.46                                                                                | 0.00                                                                                | 0.46                                                                                |
| Sat Flow, veh/h              | 0                                                                                 | 3725                                                                              | 3167                                                                              | 0                                                                                 | 5588                                                                              | 1583                                                                               |                                                                                     |                                                                                     |                                                                                     | 3442                                                                                | 0                                                                                   | 2787                                                                                |
| Grp Volume(v), veh/h         | 0                                                                                 | 791                                                                               | 617                                                                               | 0                                                                                 | 1312                                                                              | 0                                                                                  |                                                                                     |                                                                                     |                                                                                     | 694                                                                                 | 0                                                                                   | 1178                                                                                |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1863                                                                              | 1583                                                                              | 0                                                                                 | 1863                                                                              | 1583                                                                               |                                                                                     |                                                                                     |                                                                                     | 1721                                                                                | 0                                                                                   | 1393                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 20.9                                                                              | 18.7                                                                              | 0.0                                                                               | 19.4                                                                              | 0.0                                                                                |                                                                                     |                                                                                     |                                                                                     | 19.0                                                                                | 0.0                                                                                 | 55.0                                                                                |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 20.9                                                                              | 18.7                                                                              | 0.0                                                                               | 19.4                                                                              | 0.0                                                                                |                                                                                     |                                                                                     |                                                                                     | 19.0                                                                                | 0.0                                                                                 | 55.0                                                                                |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 1.00                                                                              | 0.00                                                                              |                                                                                   | 1.00                                                                               |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 1666                                                                              | 1416                                                                              | 0                                                                                 | 2499                                                                              | 708                                                                                |                                                                                     |                                                                                     |                                                                                     | 1595                                                                                | 0                                                                                   | 1292                                                                                |
| V/C Ratio(X)                 | 0.00                                                                              | 0.47                                                                              | 0.44                                                                              | 0.00                                                                              | 0.52                                                                              | 0.00                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.44                                                                                | 0.00                                                                                | 0.91                                                                                |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 1666                                                                              | 1416                                                                              | 0                                                                                 | 2499                                                                              | 708                                                                                |                                                                                     |                                                                                     |                                                                                     | 1792                                                                                | 0                                                                                   | 1451                                                                                |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.33                                                                              | 1.33                                                                               |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.00                                                                              | 0.64                                                                              | 0.64                                                                              | 0.00                                                                              | 0.85                                                                              | 0.00                                                                               |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 27.2                                                                              | 26.6                                                                              | 0.0                                                                               | 19.6                                                                              | 0.0                                                                                |                                                                                     |                                                                                     |                                                                                     | 25.2                                                                                | 0.0                                                                                 | 34.9                                                                                |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.6                                                                               | 0.6                                                                               | 0.0                                                                               | 0.7                                                                               | 0.0                                                                                |                                                                                     |                                                                                     |                                                                                     | 0.2                                                                                 | 0.0                                                                                 | 8.4                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                |                                                                                     |                                                                                     |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 10.8                                                                              | 8.3                                                                               | 0.0                                                                               | 10.1                                                                              | 0.0                                                                                |                                                                                     |                                                                                     |                                                                                     | 9.0                                                                                 | 0.0                                                                                 | 22.6                                                                                |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 27.8                                                                              | 27.2                                                                              | 0.0                                                                               | 20.3                                                                              | 0.0                                                                                |                                                                                     |                                                                                     |                                                                                     | 25.4                                                                                | 0.0                                                                                 | 43.3                                                                                |
| LnGrp LOS                    |                                                                                   | C                                                                                 | C                                                                                 |                                                                                   | C                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     | C                                                                                   |                                                                                     | D                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 1408                                                                              |                                                                                   |                                                                                   | 1312                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 1872                                                                                |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 27.5                                                                              |                                                                                   |                                                                                   | 20.3                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 36.7                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                  | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 69.0                                                                              |                                                                                   | 71.0                                                                              |                                                                                   | 69.0                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 6.4                                                                               |                                                                                   | 6.1                                                                               |                                                                                   | 6.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 54.6                                                                              |                                                                                   | 72.9                                                                              |                                                                                   | 54.6                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 22.9                                                                              |                                                                                   | 57.0                                                                              |                                                                                   | 21.4                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 22.6                                                                              |                                                                                   | 7.9                                                                               |                                                                                   | 23.4                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 29.2                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 6: I-15 NB Ramps & Rancho Bernardo Rd

3/24/2016

|                              |  |      |      |      |      |      |      |      |      |     |     |     |
|------------------------------|------------------------------------------------------------------------------------|------|------|------|------|------|------|------|------|-----|-----|-----|
| Movement                     | EBL                                                                                | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL | SBT | SBR |
| Lane Configurations          |                                                                                    | ↑↑↑  | ↑    |      | ↑↑↑  | ↑    | ↑↑   |      | ↑↑   |     |     |     |
| Traffic Volume (veh/h)       | 0                                                                                  | 838  | 593  | 0    | 1093 | 285  | 658  | 0    | 433  | 0   | 0   | 0   |
| Future Volume (veh/h)        | 0                                                                                  | 838  | 593  | 0    | 1093 | 285  | 658  | 0    | 433  | 0   | 0   | 0   |
| Number                       | 5                                                                                  | 2    | 12   | 1    | 6    | 16   | 3    | 8    | 18   |     |     |     |
| Initial Q (Qb), veh          | 0                                                                                  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |     |     |     |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                               |      | 1.00 | 1.00 |      | 1.00 | 1.00 |      | 1.00 |     |     |     |
| Parking Bus, Adj             | 1.00                                                                               | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |     |     |     |
| Adj Sat Flow, veh/h/ln       | 0                                                                                  | 1863 | 1863 | 0    | 1863 | 1863 | 1863 | 0    | 1863 |     |     |     |
| Adj Flow Rate, veh/h         | 0                                                                                  | 891  | 0    | 0    | 1163 | 303  | 700  | 0    | 461  |     |     |     |
| Adj No. of Lanes             | 0                                                                                  | 3    | 1    | 0    | 3    | 1    | 2    | 0    | 2    |     |     |     |
| Peak Hour Factor             | 0.92                                                                               | 0.94 | 0.94 | 0.92 | 0.94 | 0.94 | 0.94 | 0.92 | 0.94 |     |     |     |
| Percent Heavy Veh, %         | 0                                                                                  | 2    | 2    | 0    | 2    | 2    | 2    | 0    | 2    |     |     |     |
| Cap, veh/h                   | 0                                                                                  | 3727 | 1056 | 0    | 3392 | 1056 | 839  | 0    | 679  |     |     |     |
| Arrive On Green              | 0.00                                                                               | 1.00 | 0.00 | 0.00 | 0.67 | 0.67 | 0.24 | 0.00 | 0.24 |     |     |     |
| Sat Flow, veh/h              | 0                                                                                  | 5588 | 1583 | 0    | 5253 | 1583 | 3442 | 0    | 2787 |     |     |     |
| Grp Volume(v), veh/h         | 0                                                                                  | 891  | 0    | 0    | 1163 | 303  | 700  | 0    | 461  |     |     |     |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                  | 1863 | 1583 | 0    | 1695 | 1583 | 1721 | 0    | 1393 |     |     |     |
| Q Serve(g_s), s              | 0.0                                                                                | 0.0  | 0.0  | 0.0  | 13.8 | 11.0 | 27.0 | 0.0  | 21.0 |     |     |     |
| Cycle Q Clear(g_c), s        | 0.0                                                                                | 0.0  | 0.0  | 0.0  | 13.8 | 11.0 | 27.0 | 0.0  | 21.0 |     |     |     |
| Prop In Lane                 | 0.00                                                                               |      | 1.00 | 0.00 |      | 1.00 | 1.00 |      | 1.00 |     |     |     |
| Lane Grp Cap(c), veh/h       | 0                                                                                  | 3727 | 1056 | 0    | 3392 | 1056 | 839  | 0    | 679  |     |     |     |
| V/C Ratio(X)                 | 0.00                                                                               | 0.24 | 0.00 | 0.00 | 0.34 | 0.29 | 0.83 | 0.00 | 0.68 |     |     |     |
| Avail Cap(c_a), veh/h        | 0                                                                                  | 3727 | 1056 | 0    | 3392 | 1056 | 1423 | 0    | 1152 |     |     |     |
| HCM Platoon Ratio            | 1.00                                                                               | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |     |     |     |
| Upstream Filter(I)           | 0.00                                                                               | 0.86 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |     |     |     |
| Uniform Delay (d), s/veh     | 0.0                                                                                | 0.0  | 0.0  | 0.0  | 10.1 | 9.6  | 50.3 | 0.0  | 48.0 |     |     |     |
| Incr Delay (d2), s/veh       | 0.0                                                                                | 0.1  | 0.0  | 0.0  | 0.3  | 0.7  | 2.3  | 0.0  | 1.2  |     |     |     |
| Initial Q Delay(d3),s/veh    | 0.0                                                                                | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |     |     |     |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                                | 0.0  | 0.0  | 0.0  | 6.5  | 5.0  | 13.1 | 0.0  | 8.2  |     |     |     |
| LnGrp Delay(d),s/veh         | 0.0                                                                                | 0.1  | 0.0  | 0.0  | 10.3 | 10.3 | 52.5 | 0.0  | 49.2 |     |     |     |
| LnGrp LOS                    |                                                                                    | A    |      |      | B    | B    | D    |      | D    |     |     |     |
| Approach Vol, veh/h          |                                                                                    | 891  |      |      | 1466 |      |      | 1161 |      |     |     |     |
| Approach Delay, s/veh        |                                                                                    | 0.1  |      |      | 10.3 |      |      | 51.2 |      |     |     |     |
| Approach LOS                 |                                                                                    | A    |      |      | B    |      |      | D    |      |     |     |     |
| Timer                        | 1                                                                                  | 2    | 3    | 4    | 5    | 6    | 7    | 8    |      |     |     |     |
| Assigned Phs                 |                                                                                    | 2    |      |      |      | 6    |      | 8    |      |     |     |     |
| Phs Duration (G+Y+Rc), s     |                                                                                    | 99.8 |      |      |      | 99.8 |      | 40.2 |      |     |     |     |
| Change Period (Y+Rc), s      |                                                                                    | 6.4  |      |      |      | 6.4  |      | 6.1  |      |     |     |     |
| Max Green Setting (Gmax), s  |                                                                                    | 69.6 |      |      |      | 69.6 |      | 57.9 |      |     |     |     |
| Max Q Clear Time (g_c+I1), s |                                                                                    | 2.0  |      |      |      | 15.8 |      | 29.0 |      |     |     |     |
| Green Ext Time (p_c), s      |                                                                                    | 29.0 |      |      |      | 26.5 |      | 5.1  |      |     |     |     |
| <b>Intersection Summary</b>  |                                                                                    |      |      |      |      |      |      |      |      |     |     |     |
| HCM 2010 Ctrl Delay          |                                                                                    |      | 21.2 |      |      |      |      |      |      |     |     |     |
| HCM 2010 LOS                 |                                                                                    |      | C    |      |      |      |      |      |      |     |     |     |
| <b>Notes</b>                 |                                                                                    |      |      |      |      |      |      |      |      |     |     |     |

# HCM 2010 Signalized Intersection Summary

## 7: Bernardo Center Dr & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |                                                                                   |   |  |                                                                                     |  |  |  |
| Traffic Volume (veh/h)       | 320                                                                               | 595                                                                               | 300                                                                               | 163                                                                               | 821                                                                               | 85                                                                                | 258                                                                                | 188                                                                                 | 109                                                                                 | 185                                                                                 | 247                                                                                 | 111                                                                                 |
| Future Volume (veh/h)        | 320                                                                               | 595                                                                               | 300                                                                               | 163                                                                               | 821                                                                               | 85                                                                                | 258                                                                                | 188                                                                                 | 109                                                                                 | 185                                                                                 | 247                                                                                 | 111                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                               |                                                                                     | 0.99                                                                                | 1.00                                                                                |                                                                                     | 0.99                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h         | 344                                                                               | 643                                                                               | 321                                                                               | 175                                                                               | 883                                                                               | 91                                                                                | 277                                                                                | 202                                                                                 | 117                                                                                 | 199                                                                                 | 266                                                                                 | 119                                                                                 |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 | 1                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                  | 2                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                               | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 434                                                                               | 1549                                                                              | 658                                                                               | 256                                                                               | 1190                                                                              | 123                                                                               | 359                                                                                | 397                                                                                 | 220                                                                                 | 284                                                                                 | 564                                                                                 | 442                                                                                 |
| Arrive On Green              | 0.12                                                                              | 0.42                                                                              | 0.42                                                                              | 0.07                                                                              | 0.37                                                                              | 0.37                                                                              | 0.10                                                                               | 0.18                                                                                | 0.18                                                                                | 0.08                                                                                | 0.16                                                                                | 0.16                                                                                |
| Sat Flow, veh/h              | 3548                                                                              | 3725                                                                              | 1583                                                                              | 3442                                                                              | 3234                                                                              | 333                                                                               | 3442                                                                               | 2193                                                                                | 1214                                                                                | 3442                                                                                | 3539                                                                                | 1560                                                                                |
| Grp Volume(v), veh/h         | 344                                                                               | 643                                                                               | 321                                                                               | 175                                                                               | 483                                                                               | 491                                                                               | 277                                                                                | 161                                                                                 | 158                                                                                 | 199                                                                                 | 266                                                                                 | 119                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1721                                                                              | 1770                                                                              | 1798                                                                              | 1721                                                                               | 1770                                                                                | 1637                                                                                | 1721                                                                                | 1770                                                                                | 1560                                                                                |
| Q Serve(g_s), s              | 8.0                                                                               | 10.4                                                                              | 12.6                                                                              | 4.2                                                                               | 20.2                                                                              | 20.2                                                                              | 6.7                                                                                | 7.0                                                                                 | 7.4                                                                                 | 4.8                                                                                 | 5.8                                                                                 | 5.0                                                                                 |
| Cycle Q Clear(g_c), s        | 8.0                                                                               | 10.4                                                                              | 12.6                                                                              | 4.2                                                                               | 20.2                                                                              | 20.2                                                                              | 6.7                                                                                | 7.0                                                                                 | 7.4                                                                                 | 4.8                                                                                 | 5.8                                                                                 | 5.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.19                                                                              | 1.00                                                                               |                                                                                     | 0.74                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 434                                                                               | 1549                                                                              | 658                                                                               | 256                                                                               | 651                                                                               | 662                                                                               | 359                                                                                | 321                                                                                 | 297                                                                                 | 284                                                                                 | 564                                                                                 | 442                                                                                 |
| V/C Ratio(X)                 | 0.79                                                                              | 0.42                                                                              | 0.49                                                                              | 0.68                                                                              | 0.74                                                                              | 0.74                                                                              | 0.77                                                                               | 0.50                                                                                | 0.53                                                                                | 0.70                                                                                | 0.47                                                                                | 0.27                                                                                |
| Avail Cap(c_a), veh/h        | 551                                                                               | 1631                                                                              | 693                                                                               | 450                                                                               | 750                                                                               | 762                                                                               | 438                                                                                | 814                                                                                 | 753                                                                                 | 498                                                                                 | 1666                                                                                | 928                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 36.2                                                                              | 17.5                                                                              | 18.2                                                                              | 38.3                                                                              | 23.3                                                                              | 23.3                                                                              | 37.1                                                                               | 31.3                                                                                | 31.5                                                                                | 38.0                                                                                | 32.4                                                                                | 23.7                                                                                |
| Incr Delay (d2), s/veh       | 6.1                                                                               | 0.2                                                                               | 0.6                                                                               | 3.2                                                                               | 3.4                                                                               | 3.4                                                                               | 6.8                                                                                | 1.2                                                                                 | 1.5                                                                                 | 3.1                                                                                 | 0.6                                                                                 | 0.3                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 4.3                                                                               | 5.3                                                                               | 5.6                                                                               | 2.1                                                                               | 10.4                                                                              | 10.6                                                                              | 3.5                                                                                | 3.5                                                                                 | 3.5                                                                                 | 2.4                                                                                 | 2.9                                                                                 | 2.2                                                                                 |
| LnGrp Delay(d),s/veh         | 42.4                                                                              | 17.7                                                                              | 18.7                                                                              | 41.5                                                                              | 26.8                                                                              | 26.7                                                                              | 43.9                                                                               | 32.5                                                                                | 33.0                                                                                | 41.1                                                                                | 33.1                                                                                | 24.0                                                                                |
| LnGrp LOS                    | D                                                                                 | B                                                                                 | B                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                  | C                                                                                   | C                                                                                   | D                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h          | 1308                                                                              |                                                                                   |                                                                                   |                                                                                   | 1149                                                                              |                                                                                   |                                                                                    |                                                                                     | 596                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 24.4                                                                              |                                                                                   |                                                                                   |                                                                                   | 29.0                                                                              |                                                                                   |                                                                                    |                                                                                     | 37.9                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 10.7                                                                              | 41.5                                                                              | 13.3                                                                              | 19.4                                                                              | 14.8                                                                              | 37.5                                                                              | 11.4                                                                               | 21.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.4                                                                               | 6.2                                                                               | 4.4                                                                               | 5.9                                                                               | 4.4                                                                               | * 6.2                                                                             | 4.4                                                                                | * 5.9                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 11.1                                                                              | 37.2                                                                              | 10.8                                                                              | 40.0                                                                              | 13.2                                                                              | * 36                                                                              | 12.3                                                                               | * 39                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 6.2                                                                               | 14.6                                                                              | 8.7                                                                               | 7.8                                                                               | 10.0                                                                              | 22.2                                                                              | 6.8                                                                                | 9.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.2                                                                               | 12.4                                                                              | 0.2                                                                               | 4.1                                                                               | 0.4                                                                               | 9.0                                                                               | 0.3                                                                                | 4.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          | 29.6                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 8: West Bernardo Dr & Duenda Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |                                                                                     |  |  |  |
| Traffic Volume (veh/h)       | 20                                                                                | 170                                                                               | 149                                                                               | 102                                                                               | 51                                                                                | 40                                                                                | 30                                                                                 | 100                                                                                 | 74                                                                                  | 97                                                                                  | 218                                                                                 | 10                                                                                  |
| Future Volume (veh/h)        | 20                                                                                | 170                                                                               | 149                                                                               | 102                                                                               | 51                                                                                | 40                                                                                | 30                                                                                 | 100                                                                                 | 74                                                                                  | 97                                                                                  | 218                                                                                 | 10                                                                                  |
| Number                       | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                  | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 22                                                                                | 185                                                                               | 162                                                                               | 111                                                                               | 55                                                                                | 43                                                                                | 33                                                                                 | 109                                                                                 | 80                                                                                  | 105                                                                                 | 237                                                                                 | 11                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                  | 2                                                                                   | 0                                                                                   | 1                                                                                   | 2                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 460                                                                               | 236                                                                               | 207                                                                               | 189                                                                               | 199                                                                               | 169                                                                               | 53                                                                                 | 279                                                                                 | 189                                                                                 | 136                                                                                 | 637                                                                                 | 29                                                                                  |
| Arrive On Green              | 0.26                                                                              | 0.26                                                                              | 0.26                                                                              | 0.11                                                                              | 0.11                                                                              | 0.11                                                                              | 0.03                                                                               | 0.14                                                                                | 0.14                                                                                | 0.08                                                                                | 0.18                                                                                | 0.18                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 911                                                                               | 797                                                                               | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                               | 2018                                                                                | 1372                                                                                | 1774                                                                                | 3445                                                                                | 159                                                                                 |
| Grp Volume(v), veh/h         | 22                                                                                | 0                                                                                 | 347                                                                               | 111                                                                               | 55                                                                                | 43                                                                                | 33                                                                                 | 94                                                                                  | 95                                                                                  | 105                                                                                 | 121                                                                                 | 127                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 0                                                                                 | 1708                                                                              | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                               | 1770                                                                                | 1621                                                                                | 1774                                                                                | 1770                                                                                | 1835                                                                                |
| Q Serve(g_s), s              | 0.4                                                                               | 0.0                                                                               | 9.0                                                                               | 2.8                                                                               | 1.3                                                                               | 1.2                                                                               | 0.9                                                                                | 2.3                                                                                 | 2.5                                                                                 | 2.8                                                                                 | 2.9                                                                                 | 2.9                                                                                 |
| Cycle Q Clear(g_c), s        | 0.4                                                                               | 0.0                                                                               | 9.0                                                                               | 2.8                                                                               | 1.3                                                                               | 1.2                                                                               | 0.9                                                                                | 2.3                                                                                 | 2.5                                                                                 | 2.8                                                                                 | 2.9                                                                                 | 2.9                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.47                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.85                                                                                | 1.00                                                                                |                                                                                     | 0.09                                                                                |
| Lane Grp Cap(c), veh/h       | 460                                                                               | 0                                                                                 | 443                                                                               | 189                                                                               | 199                                                                               | 169                                                                               | 53                                                                                 | 244                                                                                 | 224                                                                                 | 136                                                                                 | 327                                                                                 | 339                                                                                 |
| V/C Ratio(X)                 | 0.05                                                                              | 0.00                                                                              | 0.78                                                                              | 0.59                                                                              | 0.28                                                                              | 0.25                                                                              | 0.63                                                                               | 0.39                                                                                | 0.42                                                                                | 0.77                                                                                | 0.37                                                                                | 0.37                                                                                |
| Avail Cap(c_a), veh/h        | 706                                                                               | 0                                                                                 | 680                                                                               | 781                                                                               | 820                                                                               | 697                                                                               | 186                                                                                | 742                                                                                 | 679                                                                                 | 372                                                                                 | 927                                                                                 | 961                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 13.2                                                                              | 0.0                                                                               | 16.4                                                                              | 20.3                                                                              | 19.6                                                                              | 19.6                                                                              | 22.9                                                                               | 18.7                                                                                | 18.8                                                                                | 21.6                                                                                | 17.0                                                                                | 17.0                                                                                |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.0                                                                               | 3.3                                                                               | 2.9                                                                               | 0.7                                                                               | 0.8                                                                               | 11.6                                                                               | 1.0                                                                                 | 1.3                                                                                 | 9.0                                                                                 | 0.7                                                                                 | 0.7                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.2                                                                               | 0.0                                                                               | 4.6                                                                               | 1.5                                                                               | 0.7                                                                               | 0.6                                                                               | 0.6                                                                                | 1.2                                                                                 | 1.2                                                                                 | 1.7                                                                                 | 1.4                                                                                 | 1.5                                                                                 |
| LnGrp Delay(d),s/veh         | 13.3                                                                              | 0.0                                                                               | 19.7                                                                              | 23.2                                                                              | 20.4                                                                              | 20.4                                                                              | 34.5                                                                               | 19.7                                                                                | 20.1                                                                                | 30.6                                                                                | 17.7                                                                                | 17.7                                                                                |
| LnGrp LOS                    | B                                                                                 |                                                                                   | B                                                                                 | C                                                                                 | C                                                                                 | C                                                                                 | C                                                                                  | B                                                                                   | C                                                                                   | C                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 369                                                                               |                                                                                   |                                                                                   | 209                                                                               |                                                                                   |                                                                                    | 222                                                                                 |                                                                                     |                                                                                     | 353                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 19.3                                                                              |                                                                                   |                                                                                   | 21.9                                                                              |                                                                                   |                                                                                    | 22.1                                                                                |                                                                                     |                                                                                     | 21.5                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 8.7                                                                               | 11.6                                                                              |                                                                                   | 17.4                                                                              | 6.4                                                                               | 13.8                                                                              |                                                                                    | 10.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |                                                                                    | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 10.0                                                                              | 20.0                                                                              |                                                                                   | 19.0                                                                              | 5.0                                                                               | 25.0                                                                              |                                                                                    | 21.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 4.8                                                                               | 4.5                                                                               |                                                                                   | 11.0                                                                              | 2.9                                                                               | 4.9                                                                               |                                                                                    | 4.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 2.1                                                                               |                                                                                   | 1.4                                                                               | 0.0                                                                               | 2.3                                                                               |                                                                                    | 0.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 21.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# HCM 2010 Signalized Intersection Summary

## 9: West Bernardo Dr & Via Del Campo

3/24/2016

|                              |  |  |  |  |  |  |   |   |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|---|
| Movement                     | EBL                                                                               | EBT                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                               |   |   |
| Lane Configurations          |  |  |  |                                                                                   |  |  |   |   |
| Traffic Volume (veh/h)       | 365                                                                               | 514                                                                               | 273                                                                               | 150                                                                               | 47                                                                                | 45                                                                                |   |   |
| Future Volume (veh/h)        | 365                                                                               | 514                                                                               | 273                                                                               | 150                                                                               | 47                                                                                | 45                                                                                |   |   |
| Number                       | 5                                                                                 | 2                                                                                 | 6                                                                                 | 16                                                                                | 7                                                                                 | 14                                                                                |   |   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |   |   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              |   |   |
| Adj Flow Rate, veh/h         | 429                                                                               | 605                                                                               | 321                                                                               | 176                                                                               | 55                                                                                | 53                                                                                |   |   |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 |   |   |
| Peak Hour Factor             | 0.85                                                                              | 0.85                                                                              | 0.85                                                                              | 0.85                                                                              | 0.85                                                                              | 0.85                                                                              |   |   |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |   |
| Cap, veh/h                   | 943                                                                               | 2830                                                                              | 424                                                                               | 227                                                                               | 100                                                                               | 90                                                                                |   |   |
| Arrive On Green              | 0.53                                                                              | 0.80                                                                              | 0.19                                                                              | 0.19                                                                              | 0.06                                                                              | 0.06                                                                              |   |   |
| Sat Flow, veh/h              | 1774                                                                              | 3632                                                                              | 2318                                                                              | 1193                                                                              | 1774                                                                              | 1583                                                                              |   |   |
| Grp Volume(v), veh/h         | 429                                                                               | 605                                                                               | 254                                                                               | 243                                                                               | 55                                                                                | 53                                                                                |   |   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1770                                                                              | 1648                                                                              | 1774                                                                              | 1583                                                                              |   |   |
| Q Serve(g_s), s              | 10.6                                                                              | 2.9                                                                               | 9.6                                                                               | 9.9                                                                               | 2.1                                                                               | 2.3                                                                               |   |   |
| Cycle Q Clear(g_c), s        | 10.6                                                                              | 2.9                                                                               | 9.6                                                                               | 9.9                                                                               | 2.1                                                                               | 2.3                                                                               |   |   |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   | 0.72                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Lane Grp Cap(c), veh/h       | 943                                                                               | 2830                                                                              | 337                                                                               | 314                                                                               | 100                                                                               | 90                                                                                |   |   |
| V/C Ratio(X)                 | 0.45                                                                              | 0.21                                                                              | 0.75                                                                              | 0.77                                                                              | 0.55                                                                              | 0.59                                                                              |   |   |
| Avail Cap(c_a), veh/h        | 943                                                                               | 2830                                                                              | 462                                                                               | 430                                                                               | 578                                                                               | 516                                                                               |   |   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Uniform Delay (d), s/veh     | 10.3                                                                              | 1.7                                                                               | 27.1                                                                              | 27.3                                                                              | 32.6                                                                              | 32.6                                                                              |   |   |
| Incr Delay (d2), s/veh       | 0.3                                                                               | 0.2                                                                               | 4.6                                                                               | 5.9                                                                               | 4.6                                                                               | 6.1                                                                               |   |   |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |   |
| %ile BackOfQ(50%),veh/ln     | 5.2                                                                               | 1.5                                                                               | 5.1                                                                               | 5.0                                                                               | 1.2                                                                               | 2.2                                                                               |   |   |
| LnGrp Delay(d),s/veh         | 10.6                                                                              | 1.9                                                                               | 31.7                                                                              | 33.2                                                                              | 37.1                                                                              | 38.7                                                                              |   |   |
| LnGrp LOS                    | B                                                                                 | A                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | D                                                                                 |   |   |
| Approach Vol, veh/h          |                                                                                   | 1034                                                                              | 497                                                                               |                                                                                   | 108                                                                               |                                                                                   |   |   |
| Approach Delay, s/veh        |                                                                                   | 5.5                                                                               | 32.4                                                                              |                                                                                   | 37.9                                                                              |                                                                                   |   |   |
| Approach LOS                 |                                                                                   | A                                                                                 | C                                                                                 |                                                                                   | D                                                                                 |                                                                                   |   |   |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8 |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |   |   |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 62.2                                                                              |                                                                                   | 8.7                                                                               | 43.2                                                                              | 19.0                                                                              |   |   |
| Change Period (Y+Rc), s      |                                                                                   | 5.5                                                                               |                                                                                   | * 4.7                                                                             | 5.5                                                                               | * 5.5                                                                             |   |   |
| Max Green Setting (Gmax), s  |                                                                                   | 56.7                                                                              |                                                                                   | * 23                                                                              | 33.8                                                                              | * 19                                                                              |   |   |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 4.9                                                                               |                                                                                   | 4.3                                                                               | 12.6                                                                              | 11.9                                                                              |   |   |
| Green Ext Time (p_c), s      |                                                                                   | 6.0                                                                               |                                                                                   | 0.2                                                                               | 5.3                                                                               | 1.5                                                                               |   |   |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 15.8                                                                              |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |   |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |

# HCM 2010 Signalized Intersection Summary

## 10: Bernardo Center Dr & West Bernardo Dr

3/24/2016

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|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|
| Movement                     | EBL                                                                               | EBT                                                                               | WBU                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                                 |      |
| Lane Configurations          |  |  |  |  |  |  |  |      |
| Traffic Volume (veh/h)       | 605                                                                               | 450                                                                               | 0                                                                                 | 484                                                                               | 686                                                                               | 56                                                                                | 187                                                                                 |      |
| Future Volume (veh/h)        | 605                                                                               | 450                                                                               | 0                                                                                 | 484                                                                               | 686                                                                               | 56                                                                                | 187                                                                                 |      |
| Number                       | 1                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 12                                                                                | 3                                                                                 | 18                                                                                  |      |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   |      |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.97                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              |                                                                                   | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                                |      |
| Adj Flow Rate, veh/h         | 680                                                                               | 506                                                                               |                                                                                   | 544                                                                               | 771                                                                               | 63                                                                                | 210                                                                                 |      |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                   |      |
| Peak Hour Factor             | 0.89                                                                              | 0.89                                                                              |                                                                                   | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                                |      |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   |      |
| Cap, veh/h                   | 839                                                                               | 2582                                                                              |                                                                                   | 792                                                                               | 1527                                                                              | 237                                                                               | 597                                                                                 |      |
| Arrive On Green              | 0.24                                                                              | 0.73                                                                              |                                                                                   | 0.43                                                                              | 0.43                                                                              | 0.13                                                                              | 0.13                                                                                |      |
| Sat Flow, veh/h              | 3442                                                                              | 3632                                                                              |                                                                                   | 1863                                                                              | 2716                                                                              | 1774                                                                              | 1583                                                                                |      |
| Grp Volume(v), veh/h         | 680                                                                               | 506                                                                               |                                                                                   | 544                                                                               | 771                                                                               | 63                                                                                | 210                                                                                 |      |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1770                                                                              |                                                                                   | 1863                                                                              | 1358                                                                              | 1774                                                                              | 1583                                                                                |      |
| Q Serve(g_s), s              | 13.5                                                                              | 3.3                                                                               |                                                                                   | 17.2                                                                              | 12.7                                                                              | 2.3                                                                               | 6.9                                                                                 |      |
| Cycle Q Clear(g_c), s        | 13.5                                                                              | 3.3                                                                               |                                                                                   | 17.2                                                                              | 12.7                                                                              | 2.3                                                                               | 6.9                                                                                 |      |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Lane Grp Cap(c), veh/h       | 839                                                                               | 2582                                                                              |                                                                                   | 792                                                                               | 1527                                                                              | 237                                                                               | 597                                                                                 |      |
| V/C Ratio(X)                 | 0.81                                                                              | 0.20                                                                              |                                                                                   | 0.69                                                                              | 0.50                                                                              | 0.27                                                                              | 0.35                                                                                |      |
| Avail Cap(c_a), veh/h        | 1360                                                                              | 3389                                                                              |                                                                                   | 1135                                                                              | 2028                                                                              | 809                                                                               | 1108                                                                                |      |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Uniform Delay (d), s/veh     | 25.8                                                                              | 3.1                                                                               |                                                                                   | 16.9                                                                              | 9.8                                                                               | 28.2                                                                              | 16.2                                                                                |      |
| Incr Delay (d2), s/veh       | 1.9                                                                               | 0.0                                                                               |                                                                                   | 1.1                                                                               | 0.3                                                                               | 0.6                                                                               | 0.4                                                                                 |      |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 |      |
| %ile BackOfQ(50%),veh/ln     | 6.6                                                                               | 1.6                                                                               |                                                                                   | 9.0                                                                               | 4.8                                                                               | 1.2                                                                               | 3.0                                                                                 |      |
| LnGrp Delay(d),s/veh         | 27.7                                                                              | 3.1                                                                               |                                                                                   | 18.0                                                                              | 10.1                                                                              | 28.8                                                                              | 16.5                                                                                |      |
| LnGrp LOS                    | C                                                                                 | A                                                                                 |                                                                                   | B                                                                                 | B                                                                                 | C                                                                                 | B                                                                                   |      |
| Approach Vol, veh/h          |                                                                                   | 1186                                                                              |                                                                                   | 1315                                                                              |                                                                                   | 273                                                                               |                                                                                     |      |
| Approach Delay, s/veh        |                                                                                   | 17.2                                                                              |                                                                                   | 13.4                                                                              |                                                                                   | 19.3                                                                              |                                                                                     |      |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   | B                                                                                 |                                                                                   | B                                                                                 |                                                                                     |      |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8    |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                     | 8    |
| Phs Duration (G+Y+Rc), s     | 22.0                                                                              | 36.3                                                                              |                                                                                   |                                                                                   |                                                                                   | 58.3                                                                              |                                                                                     | 14.1 |
| Change Period (Y+Rc), s      | 4.4                                                                               | 5.5                                                                               |                                                                                   |                                                                                   |                                                                                   | * 5.5                                                                             |                                                                                     | 4.4  |
| Max Green Setting (Gmax), s  | 28.6                                                                              | 44.1                                                                              |                                                                                   |                                                                                   |                                                                                   | * 69                                                                              |                                                                                     | 33.0 |
| Max Q Clear Time (g_c+I1), s | 15.5                                                                              | 19.2                                                                              |                                                                                   |                                                                                   |                                                                                   | 5.3                                                                               |                                                                                     | 8.9  |
| Green Ext Time (p_c), s      | 2.2                                                                               | 11.6                                                                              |                                                                                   |                                                                                   |                                                                                   | 15.1                                                                              |                                                                                     | 0.8  |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 15.6                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |

# HCM 2010 Signalized Intersection Summary

## 1: Camino San Bernardo & Rancho Bernardo Rd

3/24/2016

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|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 1                                                                                 | 940                                                                               | 208                                                                               | 344                                                                               | 746                                                                               | 0                                                                                 | 109                                                                                 | 0                                                                                   | 313                                                                                 | 3                                                                                   | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 1                                                                                 | 940                                                                               | 208                                                                               | 344                                                                               | 746                                                                               | 0                                                                                 | 109                                                                                 | 0                                                                                   | 313                                                                                 | 3                                                                                   | 0                                                                                   | 0                                                                                   |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                   | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 1                                                                                 | 979                                                                               | 217                                                                               | 358                                                                               | 777                                                                               | 0                                                                                 | 114                                                                                 | 0                                                                                   | 326                                                                                 | 3                                                                                   | 0                                                                                   | 0                                                                                   |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                   | 2                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 2                                                                                 | 1228                                                                              | 272                                                                               | 448                                                                               | 1969                                                                              | 0                                                                                 | 520                                                                                 | 442                                                                                 | 395                                                                                 | 153                                                                                 | 0                                                                                   | 0                                                                                   |
| Arrive On Green              | 0.00                                                                              | 0.43                                                                              | 0.43                                                                              | 0.13                                                                              | 0.56                                                                              | 0.00                                                                              | 0.25                                                                                | 0.00                                                                                | 0.25                                                                                | 0.25                                                                                | 0.00                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 2874                                                                              | 636                                                                               | 3442                                                                              | 3632                                                                              | 0                                                                                 | 1412                                                                                | 1770                                                                                | 1581                                                                                | 230                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Volume(v), veh/h         | 1                                                                                 | 602                                                                               | 594                                                                               | 358                                                                               | 777                                                                               | 0                                                                                 | 114                                                                                 | 0                                                                                   | 326                                                                                 | 3                                                                                   | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1740                                                                              | 1721                                                                              | 1770                                                                              | 0                                                                                 | 1412                                                                                | 1770                                                                                | 1581                                                                                | 230                                                                                 | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.0                                                                               | 22.2                                                                              | 22.3                                                                              | 7.6                                                                               | 9.4                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 14.7                                                                                | 0.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 22.2                                                                              | 22.3                                                                              | 7.6                                                                               | 9.4                                                                               | 0.0                                                                               | 3.9                                                                                 | 0.0                                                                                 | 14.7                                                                                | 14.9                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.37                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.00                                                                                |
| Lane Grp Cap(c), veh/h       | 2                                                                                 | 756                                                                               | 744                                                                               | 448                                                                               | 1969                                                                              | 0                                                                                 | 520                                                                                 | 442                                                                                 | 395                                                                                 | 153                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.41                                                                              | 0.80                                                                              | 0.80                                                                              | 0.80                                                                              | 0.39                                                                              | 0.00                                                                              | 0.22                                                                                | 0.00                                                                                | 0.83                                                                                | 0.02                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 118                                                                               | 836                                                                               | 821                                                                               | 504                                                                               | 1969                                                                              | 0                                                                                 | 712                                                                                 | 683                                                                                 | 610                                                                                 | 296                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 37.5                                                                              | 18.7                                                                              | 18.7                                                                              | 31.7                                                                              | 9.5                                                                               | 0.0                                                                               | 22.6                                                                                | 0.0                                                                                 | 26.7                                                                                | 33.7                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 84.2                                                                              | 4.9                                                                               | 5.1                                                                               | 8.0                                                                               | 0.1                                                                               | 0.0                                                                               | 0.2                                                                                 | 0.0                                                                                 | 5.5                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.1                                                                               | 11.7                                                                              | 11.6                                                                              | 4.1                                                                               | 4.6                                                                               | 0.0                                                                               | 1.9                                                                                 | 0.0                                                                                 | 6.9                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 121.7                                                                             | 23.6                                                                              | 23.9                                                                              | 39.8                                                                              | 9.6                                                                               | 0.0                                                                               | 22.8                                                                                | 0.0                                                                                 | 32.1                                                                                | 33.7                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | F                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | A                                                                                 |                                                                                   | C                                                                                   |                                                                                     | C                                                                                   | C                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1197                                                                              |                                                                                   |                                                                                   | 1135                                                                              |                                                                                   |                                                                                     | 440                                                                                 |                                                                                     |                                                                                     | 3                                                                                   |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 23.8                                                                              |                                                                                   |                                                                                   | 19.1                                                                              |                                                                                   |                                                                                     | 29.7                                                                                |                                                                                     |                                                                                     | 33.7                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 13.8                                                                              | 37.6                                                                              |                                                                                   | 23.8                                                                              | 4.1                                                                               | 47.3                                                                              |                                                                                     | 23.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 5.5                                                                               |                                                                                   | 5.0                                                                               | 4.0                                                                               | 5.5                                                                               |                                                                                     | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 11.0                                                                              | 35.5                                                                              |                                                                                   | 29.0                                                                              | 5.0                                                                               | 41.5                                                                              |                                                                                     | 29.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 9.6                                                                               | 24.3                                                                              |                                                                                   | 16.9                                                                              | 2.0                                                                               | 11.4                                                                              |                                                                                     | 16.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.2                                                                               | 7.8                                                                               |                                                                                   | 1.8                                                                               | 0.0                                                                               | 15.4                                                                              |                                                                                     | 1.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 22.8                                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 2: Via Del Campo & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 6                                                                                 | 1324                                                                              | 49                                                                                | 18                                                                                | 927                                                                               | 1                                                                                 | 276                                                                                | 0                                                                                   | 341                                                                                 | 1                                                                                   | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 6                                                                                 | 1324                                                                              | 49                                                                                | 18                                                                                | 927                                                                               | 1                                                                                 | 276                                                                                | 0                                                                                   | 341                                                                                 | 1                                                                                   | 0                                                                                   | 0                                                                                   |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.98                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1900                                                                               | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 7                                                                                 | 1455                                                                              | 54                                                                                | 20                                                                                | 1019                                                                              | 1                                                                                 | 303                                                                                | 0                                                                                   | 375                                                                                 | 1                                                                                   | 0                                                                                   | 0                                                                                   |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 0                                                                                  | 1                                                                                   | 1                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                               | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 13                                                                                | 1746                                                                              | 65                                                                                | 32                                                                                | 1860                                                                              | 2                                                                                 | 545                                                                                | 0                                                                                   | 440                                                                                 | 227                                                                                 | 0                                                                                   | 0                                                                                   |
| Arrive On Green              | 0.01                                                                              | 0.50                                                                              | 0.50                                                                              | 0.02                                                                              | 0.51                                                                              | 0.51                                                                              | 0.28                                                                               | 0.00                                                                                | 0.28                                                                                | 0.28                                                                                | 0.00                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 3481                                                                              | 129                                                                               | 1774                                                                              | 3628                                                                              | 4                                                                                 | 1602                                                                               | 0                                                                                   | 1558                                                                                | 478                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Volume(v), veh/h         | 7                                                                                 | 738                                                                               | 771                                                                               | 20                                                                                | 497                                                                               | 523                                                                               | 303                                                                                | 0                                                                                   | 375                                                                                 | 1                                                                                   | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1840                                                                              | 1774                                                                              | 1770                                                                              | 1862                                                                              | 1602                                                                               | 0                                                                                   | 1558                                                                                | 478                                                                                 | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.3                                                                               | 28.0                                                                              | 28.1                                                                              | 0.9                                                                               | 14.9                                                                              | 14.9                                                                              | 0.0                                                                                | 0.0                                                                                 | 17.8                                                                                | 0.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.3                                                                               | 28.0                                                                              | 28.1                                                                              | 0.9                                                                               | 14.9                                                                              | 14.9                                                                              | 11.6                                                                               | 0.0                                                                                 | 17.8                                                                                | 11.6                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.07                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.00                                                                                |
| Lane Grp Cap(c), veh/h       | 13                                                                                | 888                                                                               | 923                                                                               | 32                                                                                | 907                                                                               | 954                                                                               | 545                                                                                | 0                                                                                   | 440                                                                                 | 227                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.55                                                                              | 0.83                                                                              | 0.83                                                                              | 0.63                                                                              | 0.55                                                                              | 0.55                                                                              | 0.56                                                                               | 0.00                                                                                | 0.85                                                                                | 0.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 91                                                                                | 930                                                                               | 967                                                                               | 93                                                                                | 937                                                                               | 986                                                                               | 672                                                                                | 0                                                                                   | 581                                                                                 | 321                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 38.8                                                                              | 16.7                                                                              | 16.7                                                                              | 38.2                                                                              | 12.9                                                                              | 12.9                                                                              | 24.3                                                                               | 0.0                                                                                 | 26.6                                                                                | 29.3                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 31.7                                                                              | 6.3                                                                               | 6.2                                                                               | 18.3                                                                              | 0.6                                                                               | 0.6                                                                               | 0.9                                                                                | 0.0                                                                                 | 9.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.3                                                                               | 15.1                                                                              | 15.7                                                                              | 0.6                                                                               | 7.3                                                                               | 7.7                                                                               | 5.8                                                                                | 0.0                                                                                 | 8.8                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 70.5                                                                              | 23.0                                                                              | 22.9                                                                              | 56.6                                                                              | 13.6                                                                              | 13.5                                                                              | 25.2                                                                               | 0.0                                                                                 | 35.8                                                                                | 29.3                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | E                                                                                 | C                                                                                 | C                                                                                 | E                                                                                 | B                                                                                 | B                                                                                 | C                                                                                  |                                                                                     | D                                                                                   | C                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1516                                                                              |                                                                                   |                                                                                   | 1040                                                                              |                                                                                   |                                                                                    | 678                                                                                 |                                                                                     |                                                                                     | 1                                                                                   |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 23.2                                                                              |                                                                                   |                                                                                   | 14.4                                                                              |                                                                                   |                                                                                    | 31.1                                                                                |                                                                                     |                                                                                     | 29.3                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 5.8                                                                               | 45.2                                                                              |                                                                                   | 27.3                                                                              | 5.0                                                                               | 46.1                                                                              |                                                                                    | 27.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.4                                                                               | 5.9                                                                               |                                                                                   | * 5.2                                                                             | 4.4                                                                               | * 5.9                                                                             |                                                                                    | 5.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 4.1                                                                               | 41.2                                                                              |                                                                                   | * 30                                                                              | 4.0                                                                               | * 42                                                                              |                                                                                    | 29.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 2.9                                                                               | 30.1                                                                              |                                                                                   | 13.6                                                                              | 2.3                                                                               | 16.9                                                                              |                                                                                    | 19.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 9.2                                                                               |                                                                                   | 2.9                                                                               | 0.0                                                                               | 17.5                                                                              |                                                                                    | 2.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 22.0                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 3: Project Dwy/Matinal Rd & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 109                                                                               | 1477                                                                              | 0                                                                                 | 1                                                                                 | 862                                                                               | 48                                                                                | 0                                                                                   | 0                                                                                   | 0                                                                                   | 41                                                                                  | 0                                                                                   | 105                                                                                 |
| Future Volume (veh/h)        | 109                                                                               | 1477                                                                              | 0                                                                                 | 1                                                                                 | 862                                                                               | 48                                                                                | 0                                                                                   | 0                                                                                   | 0                                                                                   | 41                                                                                  | 0                                                                                   | 105                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                   | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.98                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 121                                                                               | 1641                                                                              | 0                                                                                 | 1                                                                                 | 958                                                                               | 53                                                                                | 0                                                                                   | 0                                                                                   | 0                                                                                   | 46                                                                                  | 0                                                                                   | 117                                                                                 |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                   | 1                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 157                                                                               | 2170                                                                              | 0                                                                                 | 3                                                                                 | 1793                                                                              | 99                                                                                | 114                                                                                 | 258                                                                                 | 0                                                                                   | 118                                                                                 | 16                                                                                  | 154                                                                                 |
| Arrive On Green              | 0.09                                                                              | 0.61                                                                              | 0.00                                                                              | 0.00                                                                              | 0.53                                                                              | 0.53                                                                              | 0.00                                                                                | 0.00                                                                                | 0.00                                                                                | 0.14                                                                                | 0.00                                                                                | 0.14                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 3632                                                                              | 0                                                                                 | 1774                                                                              | 3410                                                                              | 189                                                                               | 1270                                                                                | 1863                                                                                | 0                                                                                   | 323                                                                                 | 112                                                                                 | 1108                                                                                |
| Grp Volume(v), veh/h         | 121                                                                               | 1641                                                                              | 0                                                                                 | 1                                                                                 | 497                                                                               | 514                                                                               | 0                                                                                   | 0                                                                                   | 0                                                                                   | 163                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 0                                                                                 | 1774                                                                              | 1770                                                                              | 1829                                                                              | 1270                                                                                | 1863                                                                                | 0                                                                                   | 1544                                                                                | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 4.2                                                                               | 21.1                                                                              | 0.0                                                                               | 0.0                                                                               | 11.7                                                                              | 11.7                                                                              | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 4.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 4.2                                                                               | 21.1                                                                              | 0.0                                                                               | 0.0                                                                               | 11.7                                                                              | 11.7                                                                              | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 6.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                              |                                                                                   | 0.10                                                                              | 1.00                                                                                |                                                                                     | 0.00                                                                                | 0.28                                                                                |                                                                                     | 0.72                                                                                |
| Lane Grp Cap(c), veh/h       | 157                                                                               | 2170                                                                              | 0                                                                                 | 3                                                                                 | 931                                                                               | 962                                                                               | 114                                                                                 | 258                                                                                 | 0                                                                                   | 287                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.77                                                                              | 0.76                                                                              | 0.00                                                                              | 0.36                                                                              | 0.53                                                                              | 0.53                                                                              | 0.00                                                                                | 0.00                                                                                | 0.00                                                                                | 0.57                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 337                                                                               | 2378                                                                              | 0                                                                                 | 112                                                                               | 993                                                                               | 1026                                                                              | 514                                                                                 | 844                                                                                 | 0                                                                                   | 749                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                                | 0.00                                                                                | 0.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 28.1                                                                              | 8.8                                                                               | 0.0                                                                               | 31.5                                                                              | 9.9                                                                               | 9.9                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 26.1                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 7.8                                                                               | 1.3                                                                               | 0.0                                                                               | 62.8                                                                              | 0.5                                                                               | 0.5                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 1.8                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 2.4                                                                               | 10.4                                                                              | 0.0                                                                               | 0.1                                                                               | 5.8                                                                               | 6.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 2.9                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 36.0                                                                              | 10.1                                                                              | 0.0                                                                               | 94.3                                                                              | 10.3                                                                              | 10.3                                                                              | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 27.9                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | D                                                                                 | B                                                                                 |                                                                                   | F                                                                                 | B                                                                                 | B                                                                                 |                                                                                     |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1762                                                                              |                                                                                   |                                                                                   | 1012                                                                              |                                                                                   |                                                                                     | 0                                                                                   |                                                                                     |                                                                                     | 163                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 11.9                                                                              |                                                                                   |                                                                                   | 10.4                                                                              |                                                                                   |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     | 27.9                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 4.1                                                                               | 45.7                                                                              |                                                                                   | 13.3                                                                              | 9.6                                                                               | 40.2                                                                              |                                                                                     | 13.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 7.0                                                                               |                                                                                   | 4.6                                                                               | 4.0                                                                               | * 7                                                                               |                                                                                     | * 4.6                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 4.0                                                                               | 42.4                                                                              |                                                                                   | 28.0                                                                              | 12.0                                                                              | * 35                                                                              |                                                                                     | * 29                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 2.0                                                                               | 23.1                                                                              |                                                                                   | 8.4                                                                               | 6.2                                                                               | 13.7                                                                              |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 15.6                                                                              |                                                                                   | 0.9                                                                               | 0.1                                                                               | 17.2                                                                              |                                                                                     | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          | 12.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 4: West Bernardo Dr & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |  |  |  |                                                                                     |
| Traffic Volume (veh/h)       | 154                                                                               | 1408                                                                              | 31                                                                                | 176                                                                               | 858                                                                               | 477                                                                               | 138                                                                                 | 322                                                                                 | 629                                                                                 | 327                                                                                 | 66                                                                                  | 65                                                                                  |
| Future Volume (veh/h)        | 154                                                                               | 1408                                                                              | 31                                                                                | 176                                                                               | 858                                                                               | 477                                                                               | 138                                                                                 | 322                                                                                 | 629                                                                                 | 327                                                                                 | 66                                                                                  | 65                                                                                  |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                   | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 157                                                                               | 1437                                                                              | 32                                                                                | 180                                                                               | 876                                                                               | 487                                                                               | 141                                                                                 | 329                                                                                 | 642                                                                                 | 334                                                                                 | 67                                                                                  | 66                                                                                  |
| Adj No. of Lanes             | 2                                                                                 | 3                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 | 1                                                                                 | 2                                                                                   | 2                                                                                   | 1                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 215                                                                               | 1625                                                                              | 36                                                                                | 395                                                                               | 1354                                                                              | 604                                                                               | 210                                                                                 | 932                                                                                 | 597                                                                                 | 416                                                                                 | 578                                                                                 | 507                                                                                 |
| Arrive On Green              | 0.06                                                                              | 0.32                                                                              | 0.32                                                                              | 0.11                                                                              | 0.38                                                                              | 0.38                                                                              | 0.06                                                                                | 0.26                                                                                | 0.26                                                                                | 0.12                                                                                | 0.32                                                                                | 0.32                                                                                |
| Sat Flow, veh/h              | 3442                                                                              | 5119                                                                              | 114                                                                               | 3442                                                                              | 3539                                                                              | 1580                                                                              | 3442                                                                                | 3539                                                                                | 1578                                                                                | 3442                                                                                | 1788                                                                                | 1568                                                                                |
| Grp Volume(v), veh/h         | 157                                                                               | 952                                                                               | 517                                                                               | 180                                                                               | 876                                                                               | 487                                                                               | 141                                                                                 | 329                                                                                 | 642                                                                                 | 334                                                                                 | 66                                                                                  | 67                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1695                                                                              | 1843                                                                              | 1721                                                                              | 1770                                                                              | 1580                                                                              | 1721                                                                                | 1770                                                                                | 1578                                                                                | 1721                                                                                | 1770                                                                                | 1586                                                                                |
| Q Serve(g_s), s              | 5.2                                                                               | 31.0                                                                              | 31.0                                                                              | 5.7                                                                               | 23.7                                                                              | 32.1                                                                              | 4.7                                                                                 | 8.8                                                                                 | 23.9                                                                                | 11.0                                                                                | 3.1                                                                                 | 3.5                                                                                 |
| Cycle Q Clear(g_c), s        | 5.2                                                                               | 31.0                                                                              | 31.0                                                                              | 5.7                                                                               | 23.7                                                                              | 32.1                                                                              | 4.7                                                                                 | 8.8                                                                                 | 23.9                                                                                | 11.0                                                                                | 3.1                                                                                 | 3.5                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.06                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.99                                                                                |
| Lane Grp Cap(c), veh/h       | 215                                                                               | 1076                                                                              | 585                                                                               | 395                                                                               | 1354                                                                              | 604                                                                               | 210                                                                                 | 932                                                                                 | 597                                                                                 | 416                                                                                 | 572                                                                                 | 513                                                                                 |
| V/C Ratio(X)                 | 0.73                                                                              | 0.88                                                                              | 0.88                                                                              | 0.46                                                                              | 0.65                                                                              | 0.81                                                                              | 0.67                                                                                | 0.35                                                                                | 1.08                                                                                | 0.80                                                                                | 0.12                                                                                | 0.13                                                                                |
| Avail Cap(c_a), veh/h        | 272                                                                               | 1120                                                                              | 609                                                                               | 508                                                                               | 1418                                                                              | 633                                                                               | 1007                                                                                | 1187                                                                                | 711                                                                                 | 889                                                                                 | 572                                                                                 | 513                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 53.7                                                                              | 37.7                                                                              | 37.7                                                                              | 48.2                                                                              | 29.5                                                                              | 32.1                                                                              | 53.6                                                                                | 34.9                                                                                | 20.4                                                                                | 49.9                                                                                | 27.7                                                                                | 27.9                                                                                |
| Incr Delay (d2), s/veh       | 7.3                                                                               | 8.4                                                                               | 14.1                                                                              | 0.8                                                                               | 1.0                                                                               | 7.3                                                                               | 3.7                                                                                 | 0.2                                                                                 | 55.9                                                                                | 3.7                                                                                 | 0.1                                                                                 | 0.1                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 2.7                                                                               | 15.8                                                                              | 18.1                                                                              | 2.7                                                                               | 11.7                                                                              | 15.1                                                                              | 2.3                                                                                 | 4.3                                                                                 | 23.4                                                                                | 5.5                                                                                 | 1.5                                                                                 | 1.5                                                                                 |
| LnGrp Delay(d),s/veh         | 61.0                                                                              | 46.2                                                                              | 51.9                                                                              | 49.0                                                                              | 30.5                                                                              | 39.4                                                                              | 57.2                                                                                | 35.1                                                                                | 76.3                                                                                | 53.6                                                                                | 27.8                                                                                | 28.0                                                                                |
| LnGrp LOS                    | E                                                                                 | D                                                                                 | D                                                                                 | D                                                                                 | C                                                                                 | D                                                                                 | E                                                                                   | D                                                                                   | F                                                                                   | D                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 1626                                                                              |                                                                                   |                                                                                   | 1543                                                                              |                                                                                   |                                                                                     | 1112                                                                                |                                                                                     |                                                                                     | 467                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 49.4                                                                              |                                                                                   |                                                                                   | 35.5                                                                              |                                                                                   |                                                                                     | 61.7                                                                                |                                                                                     |                                                                                     | 46.2                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                     | E                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 19.1                                                                              | 42.9                                                                              | 11.5                                                                              | 43.1                                                                              | 11.7                                                                              | 50.3                                                                              | 18.5                                                                                | 36.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.7                                                                               | * 5.9                                                                             | 4.4                                                                               | 5.4                                                                               | 4.4                                                                               | 5.7                                                                               | 4.4                                                                                 | 5.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 17.2                                                                              | * 39                                                                              | 34.1                                                                              | 35.1                                                                              | 9.2                                                                               | 46.7                                                                              | 30.1                                                                                | 39.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 7.7                                                                               | 33.0                                                                              | 6.7                                                                               | 5.5                                                                               | 7.2                                                                               | 34.1                                                                              | 13.0                                                                                | 25.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 5.7                                                                               | 4.0                                                                               | 0.4                                                                               | 6.3                                                                               | 0.1                                                                               | 6.9                                                                               | 1.1                                                                                 | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 47.4                                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 5: I-15 SB Ramps & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |                                                                                   |  |  |                                                                                    |                                                                                     |                                                                                     |  |                                                                                     |  |
| Traffic Volume (veh/h)       | 0                                                                                 | 1528                                                                              | 834                                                                               | 0                                                                                 | 1069                                                                              | 559                                                                               | 0                                                                                  | 0                                                                                   | 0                                                                                   | 409                                                                                 | 0                                                                                   | 404                                                                                 |
| Future Volume (veh/h)        | 0                                                                                 | 1528                                                                              | 834                                                                               | 0                                                                                 | 1069                                                                              | 559                                                                               | 0                                                                                  | 0                                                                                   | 0                                                                                   | 409                                                                                 | 0                                                                                   | 404                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                |                                                                                    |                                                                                     |                                                                                     | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 0                                                                                 | 1863                                                                              | 1863                                                                              | 0                                                                                 | 1863                                                                              | 1863                                                                              |                                                                                    |                                                                                     |                                                                                     | 1863                                                                                | 0                                                                                   | 1863                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 1973                                                                              | 615                                                                               | 0                                                                                 | 1114                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 426                                                                                 | 0                                                                                   | 421                                                                                 |
| Adj No. of Lanes             | 0                                                                                 | 3                                                                                 | 1                                                                                 | 0                                                                                 | 3                                                                                 | 1                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 2                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.96                                                                              | 0.96                                                                              | 0.92                                                                              | 0.96                                                                              | 0.96                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.96                                                                                | 0.92                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %         | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 0                                                                                 | 4093                                                                              | 1160                                                                              | 0                                                                                 | 4093                                                                              | 1160                                                                              |                                                                                    |                                                                                     |                                                                                     | 614                                                                                 | 0                                                                                   | 497                                                                                 |
| Arrive On Green              | 0.00                                                                              | 0.73                                                                              | 0.73                                                                              | 0.00                                                                              | 1.00                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.18                                                                                | 0.00                                                                                | 0.18                                                                                |
| Sat Flow, veh/h              | 0                                                                                 | 5588                                                                              | 1583                                                                              | 0                                                                                 | 5588                                                                              | 1583                                                                              |                                                                                    |                                                                                     |                                                                                     | 3442                                                                                | 0                                                                                   | 2787                                                                                |
| Grp Volume(v), veh/h         | 0                                                                                 | 1973                                                                              | 615                                                                               | 0                                                                                 | 1114                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 426                                                                                 | 0                                                                                   | 421                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1863                                                                              | 1583                                                                              | 0                                                                                 | 1863                                                                              | 1583                                                                              |                                                                                    |                                                                                     |                                                                                     | 1721                                                                                | 0                                                                                   | 1393                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 20.4                                                                              | 23.8                                                                              | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 16.3                                                                                | 0.0                                                                                 | 20.5                                                                                |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 20.4                                                                              | 23.8                                                                              | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 16.3                                                                                | 0.0                                                                                 | 20.5                                                                                |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 1.00                                                                              | 0.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 4093                                                                              | 1160                                                                              | 0                                                                                 | 4093                                                                              | 1160                                                                              |                                                                                    |                                                                                     |                                                                                     | 614                                                                                 | 0                                                                                   | 497                                                                                 |
| V/C Ratio(X)                 | 0.00                                                                              | 0.48                                                                              | 0.53                                                                              | 0.00                                                                              | 0.27                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.69                                                                                | 0.00                                                                                | 0.85                                                                                |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 4093                                                                              | 1160                                                                              | 0                                                                                 | 4093                                                                              | 1160                                                                              |                                                                                    |                                                                                     |                                                                                     | 784                                                                                 | 0                                                                                   | 635                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                              | 2.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.00                                                                              | 0.35                                                                              | 0.35                                                                              | 0.00                                                                              | 0.86                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 7.7                                                                               | 8.2                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 53.9                                                                                | 0.0                                                                                 | 55.7                                                                                |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.1                                                                               | 0.6                                                                               | 0.0                                                                               | 0.1                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 1.9                                                                                 | 0.0                                                                                 | 8.5                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 10.5                                                                              | 10.4                                                                              | 0.0                                                                               | 0.1                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 7.9                                                                                 | 0.0                                                                                 | 8.5                                                                                 |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 7.9                                                                               | 8.8                                                                               | 0.0                                                                               | 0.1                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 55.8                                                                                | 0.0                                                                                 | 64.1                                                                                |
| LnGrp LOS                    |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     | E                                                                                   |                                                                                     | E                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 2588                                                                              |                                                                                   |                                                                                   | 1114                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 847                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 8.1                                                                               |                                                                                   |                                                                                   | 0.1                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 59.9                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 108.9                                                                             |                                                                                   | 31.1                                                                              |                                                                                   | 108.9                                                                             |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 6.4                                                                               |                                                                                   | 6.1                                                                               |                                                                                   | 6.4                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 95.6                                                                              |                                                                                   | 31.9                                                                              |                                                                                   | 95.6                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 25.8                                                                              |                                                                                   | 22.5                                                                              |                                                                                   | 2.0                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 56.8                                                                              |                                                                                   | 2.5                                                                               |                                                                                   | 71.4                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 15.8                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# HCM 2010 Signalized Intersection Summary

## 6: I-15 NB Ramps & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |                                                                                   |  |  |  |                                                                                     |  |                                                                                     |                                                                                     |                                                                                     |
| Traffic Volume (veh/h)       | 0                                                                                 | 879                                                                               | 1058                                                                              | 0                                                                                 | 983                                                                               | 487                                                                               | 645                                                                                | 0                                                                                   | 432                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 0                                                                                 | 879                                                                               | 1058                                                                              | 0                                                                                 | 983                                                                               | 487                                                                               | 645                                                                                | 0                                                                                   | 432                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 0                                                                                 | 1863                                                                              | 1863                                                                              | 0                                                                                 | 1863                                                                              | 1863                                                                              | 1863                                                                               | 0                                                                                   | 1863                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Adj Flow Rate, veh/h         | 0                                                                                 | 935                                                                               | 0                                                                                 | 0                                                                                 | 1046                                                                              | 518                                                                               | 686                                                                                | 0                                                                                   | 460                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Adj No. of Lanes             | 0                                                                                 | 3                                                                                 | 1                                                                                 | 0                                                                                 | 3                                                                                 | 1                                                                                 | 2                                                                                  | 0                                                                                   | 2                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Peak Hour Factor             | 0.92                                                                              | 0.94                                                                              | 0.94                                                                              | 0.92                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                               | 0.92                                                                                | 0.94                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Percent Heavy Veh, %         | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 0                                                                                   | 2                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Cap, veh/h                   | 0                                                                                 | 3758                                                                              | 1065                                                                              | 0                                                                                 | 3420                                                                              | 1065                                                                              | 820                                                                                | 0                                                                                   | 664                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Arrive On Green              | 0.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 0.67                                                                              | 0.67                                                                              | 0.24                                                                               | 0.00                                                                                | 0.24                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Sat Flow, veh/h              | 0                                                                                 | 5588                                                                              | 1583                                                                              | 0                                                                                 | 5253                                                                              | 1583                                                                              | 3442                                                                               | 0                                                                                   | 2787                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Grp Volume(v), veh/h         | 0                                                                                 | 935                                                                               | 0                                                                                 | 0                                                                                 | 1046                                                                              | 518                                                                               | 686                                                                                | 0                                                                                   | 460                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1863                                                                              | 1583                                                                              | 0                                                                                 | 1695                                                                              | 1583                                                                              | 1721                                                                               | 0                                                                                   | 1393                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Q Serve(g_s), s              | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 11.9                                                                              | 22.3                                                                              | 26.6                                                                               | 0.0                                                                                 | 21.1                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 11.9                                                                              | 22.3                                                                              | 26.6                                                                               | 0.0                                                                                 | 21.1                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 1.00                                                                              | 0.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 3758                                                                              | 1065                                                                              | 0                                                                                 | 3420                                                                              | 1065                                                                              | 820                                                                                | 0                                                                                   | 664                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| V/C Ratio(X)                 | 0.00                                                                              | 0.25                                                                              | 0.00                                                                              | 0.00                                                                              | 0.31                                                                              | 0.49                                                                              | 0.84                                                                               | 0.00                                                                                | 0.69                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 3758                                                                              | 1065                                                                              | 0                                                                                 | 3420                                                                              | 1065                                                                              | 1251                                                                               | 0                                                                                   | 1013                                                                                |                                                                                     |                                                                                     |                                                                                     |
| HCM Platoon Ratio            | 1.00                                                                              | 1.67                                                                              | 1.67                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Upstream Filter(I)           | 0.00                                                                              | 0.79                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 9.5                                                                               | 11.2                                                                              | 50.7                                                                               | 0.0                                                                                 | 48.7                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.1                                                                               | 0.0                                                                               | 0.0                                                                               | 0.2                                                                               | 1.6                                                                               | 3.2                                                                                | 0.0                                                                                 | 1.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 5.6                                                                               | 10.1                                                                              | 13.0                                                                               | 0.0                                                                                 | 8.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 0.1                                                                               | 0.0                                                                               | 0.0                                                                               | 9.7                                                                               | 12.7                                                                              | 53.9                                                                               | 0.0                                                                                 | 50.0                                                                                |                                                                                     |                                                                                     |                                                                                     |
| LnGrp LOS                    |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 | B                                                                                 | D                                                                                  |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 935                                                                               |                                                                                   |                                                                                   | 1564                                                                              |                                                                                   |                                                                                    | 1146                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 0.1                                                                               |                                                                                   |                                                                                   | 10.7                                                                              |                                                                                   |                                                                                    | 52.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 100.6                                                                             |                                                                                   |                                                                                   |                                                                                   | 100.6                                                                             |                                                                                    | 39.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 6.4                                                                               |                                                                                   |                                                                                   |                                                                                   | 6.4                                                                               |                                                                                    | 6.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 76.6                                                                              |                                                                                   |                                                                                   |                                                                                   | 76.6                                                                              |                                                                                    | 50.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 2.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 24.3                                                                              |                                                                                    | 28.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 31.6                                                                              |                                                                                   |                                                                                   |                                                                                   | 27.3                                                                              |                                                                                    | 4.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 21.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 7: Bernardo Center Dr & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|--|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |  |  |  |  |
| Lane Configurations          |  |  |  |  |  |                                                                                   |   |  |                                                                                     |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 249                                                                               | 663                                                                               | 298                                                                               | 123                                                                               | 631                                                                               | 145                                                                               | 431                                                                                | 465                                                                                 | 247                                                                                 | 173                                                                                 | 276                                                                                 | 99                                                                                  |  |  |  |  |
| Future Volume (veh/h)        | 249                                                                               | 663                                                                               | 298                                                                               | 123                                                                               | 631                                                                               | 145                                                                               | 431                                                                                | 465                                                                                 | 247                                                                                 | 173                                                                                 | 276                                                                                 | 99                                                                                  |  |  |  |  |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |  |  |  |  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |  |  |  |  |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.98                                                                                |  |  |  |  |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |  |  |  |  |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |  |  |  |  |
| Adj Flow Rate, veh/h         | 262                                                                               | 698                                                                               | 314                                                                               | 129                                                                               | 664                                                                               | 153                                                                               | 454                                                                                | 489                                                                                 | 260                                                                                 | 182                                                                                 | 291                                                                                 | 104                                                                                 |  |  |  |  |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 | 1                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                  | 2                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   | 1                                                                                   |  |  |  |  |
| Peak Hour Factor             | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                               | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |  |  |  |  |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |  |  |  |  |
| Cap, veh/h                   | 334                                                                               | 1304                                                                              | 547                                                                               | 194                                                                               | 890                                                                               | 205                                                                               | 531                                                                                | 666                                                                                 | 352                                                                                 | 256                                                                                 | 771                                                                                 | 486                                                                                 |  |  |  |  |
| Arrive On Green              | 0.09                                                                              | 0.35                                                                              | 0.35                                                                              | 0.06                                                                              | 0.31                                                                              | 0.31                                                                              | 0.15                                                                               | 0.30                                                                                | 0.30                                                                                | 0.07                                                                                | 0.22                                                                                | 0.22                                                                                |  |  |  |  |
| Sat Flow, veh/h              | 3548                                                                              | 3725                                                                              | 1563                                                                              | 3442                                                                              | 2850                                                                              | 656                                                                               | 3442                                                                               | 2236                                                                                | 1183                                                                                | 3442                                                                                | 3539                                                                                | 1549                                                                                |  |  |  |  |
| Grp Volume(v), veh/h         | 262                                                                               | 698                                                                               | 314                                                                               | 129                                                                               | 412                                                                               | 405                                                                               | 454                                                                                | 386                                                                                 | 363                                                                                 | 182                                                                                 | 291                                                                                 | 104                                                                                 |  |  |  |  |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1863                                                                              | 1563                                                                              | 1721                                                                              | 1770                                                                              | 1736                                                                              | 1721                                                                               | 1770                                                                                | 1650                                                                                | 1721                                                                                | 1770                                                                                | 1549                                                                                |  |  |  |  |
| Q Serve(g_s), s              | 6.8                                                                               | 14.2                                                                              | 15.4                                                                              | 3.5                                                                               | 19.7                                                                              | 19.8                                                                              | 12.1                                                                               | 18.5                                                                                | 18.7                                                                                | 4.9                                                                                 | 6.6                                                                                 | 4.7                                                                                 |  |  |  |  |
| Cycle Q Clear(g_c), s        | 6.8                                                                               | 14.2                                                                              | 15.4                                                                              | 3.5                                                                               | 19.7                                                                              | 19.8                                                                              | 12.1                                                                               | 18.5                                                                                | 18.7                                                                                | 4.9                                                                                 | 6.6                                                                                 | 4.7                                                                                 |  |  |  |  |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.38                                                                              | 1.00                                                                               |                                                                                     | 0.72                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |  |  |  |  |
| Lane Grp Cap(c), veh/h       | 334                                                                               | 1304                                                                              | 547                                                                               | 194                                                                               | 553                                                                               | 542                                                                               | 531                                                                                | 527                                                                                 | 491                                                                                 | 256                                                                                 | 771                                                                                 | 486                                                                                 |  |  |  |  |
| V/C Ratio(X)                 | 0.78                                                                              | 0.54                                                                              | 0.57                                                                              | 0.66                                                                              | 0.75                                                                              | 0.75                                                                              | 0.85                                                                               | 0.73                                                                                | 0.74                                                                                | 0.71                                                                                | 0.38                                                                                | 0.21                                                                                |  |  |  |  |
| Avail Cap(c_a), veh/h        | 364                                                                               | 1404                                                                              | 589                                                                               | 251                                                                               | 631                                                                               | 620                                                                               | 605                                                                                | 858                                                                                 | 800                                                                                 | 415                                                                                 | 1499                                                                                | 805                                                                                 |  |  |  |  |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |  |  |  |  |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |  |  |  |  |
| Uniform Delay (d), s/veh     | 41.8                                                                              | 24.5                                                                              | 25.0                                                                              | 43.7                                                                              | 29.1                                                                              | 29.1                                                                              | 38.9                                                                               | 29.8                                                                                | 29.9                                                                                | 42.7                                                                                | 31.5                                                                                | 24.0                                                                                |  |  |  |  |
| Incr Delay (d2), s/veh       | 9.9                                                                               | 0.3                                                                               | 1.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.3                                                                               | 10.4                                                                               | 2.0                                                                                 | 2.2                                                                                 | 3.6                                                                                 | 0.3                                                                                 | 0.2                                                                                 |  |  |  |  |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |  |  |  |  |
| %ile BackOfQ(50%),veh/ln     | 3.8                                                                               | 7.3                                                                               | 6.8                                                                               | 1.8                                                                               | 10.3                                                                              | 10.1                                                                              | 6.5                                                                                | 9.3                                                                                 | 8.8                                                                                 | 2.5                                                                                 | 3.3                                                                                 | 2.0                                                                                 |  |  |  |  |
| LnGrp Delay(d),s/veh         | 51.8                                                                              | 24.9                                                                              | 26.1                                                                              | 47.9                                                                              | 33.3                                                                              | 33.4                                                                              | 49.3                                                                               | 31.8                                                                                | 32.0                                                                                | 46.3                                                                                | 31.8                                                                                | 24.2                                                                                |  |  |  |  |
| LnGrp LOS                    | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                  | C                                                                                   | C                                                                                   | D                                                                                   | C                                                                                   | C                                                                                   |  |  |  |  |
| Approach Vol, veh/h          | 1274                                                                              |                                                                                   |                                                                                   |                                                                                   | 946                                                                               |                                                                                   |                                                                                    |                                                                                     | 1203                                                                                |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Approach Delay, s/veh        | 30.7                                                                              |                                                                                   |                                                                                   |                                                                                   | 35.3                                                                              |                                                                                   |                                                                                    |                                                                                     | 38.5                                                                                |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Phs Duration (G+Y+Rc), s     | 9.7                                                                               | 39.3                                                                              | 19.0                                                                              | 26.5                                                                              | 13.3                                                                              | 35.7                                                                              | 11.4                                                                               | 34.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Change Period (Y+Rc), s      | 4.4                                                                               | 6.2                                                                               | 4.4                                                                               | 5.9                                                                               | 4.4                                                                               | * 6.2                                                                             | 4.4                                                                                | * 5.9                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Max Green Setting (Gmax), s  | 6.9                                                                               | 35.6                                                                              | 16.6                                                                              | 40.0                                                                              | 9.7                                                                               | * 34                                                                              | 11.4                                                                               | * 46                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Max Q Clear Time (g_c+I1), s | 5.5                                                                               | 17.4                                                                              | 14.1                                                                              | 8.6                                                                               | 8.8                                                                               | 21.8                                                                              | 6.9                                                                                | 20.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Green Ext Time (p_c), s      | 0.0                                                                               | 10.3                                                                              | 0.4                                                                               | 7.7                                                                               | 0.1                                                                               | 7.8                                                                               | 0.2                                                                                | 7.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| HCM 2010 Ctrl Delay          | 34.8                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| HCM 2010 LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |

# HCM 2010 Signalized Intersection Summary

## 8: West Bernardo Dr & Duenda Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |                                                                                     |  |  |  |
| Traffic Volume (veh/h)       | 21                                                                                | 131                                                                               | 132                                                                               | 73                                                                                | 70                                                                                | 63                                                                                | 67                                                                                 | 147                                                                                 | 90                                                                                  | 106                                                                                 | 202                                                                                 | 12                                                                                  |
| Future Volume (veh/h)        | 21                                                                                | 131                                                                               | 132                                                                               | 73                                                                                | 70                                                                                | 63                                                                                | 67                                                                                 | 147                                                                                 | 90                                                                                  | 106                                                                                 | 202                                                                                 | 12                                                                                  |
| Number                       | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                  | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.98                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.98                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 24                                                                                | 147                                                                               | 148                                                                               | 82                                                                                | 79                                                                                | 71                                                                                | 75                                                                                 | 165                                                                                 | 101                                                                                 | 119                                                                                 | 227                                                                                 | 13                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                  | 2                                                                                   | 0                                                                                   | 1                                                                                   | 2                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                               | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 418                                                                               | 199                                                                               | 200                                                                               | 169                                                                               | 177                                                                               | 151                                                                               | 95                                                                                 | 350                                                                                 | 203                                                                                 | 155                                                                                 | 666                                                                                 | 38                                                                                  |
| Arrive On Green              | 0.24                                                                              | 0.24                                                                              | 0.24                                                                              | 0.10                                                                              | 0.10                                                                              | 0.10                                                                              | 0.05                                                                               | 0.16                                                                                | 0.16                                                                                | 0.09                                                                                | 0.20                                                                                | 0.20                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 845                                                                               | 851                                                                               | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                               | 2158                                                                                | 1253                                                                                | 1774                                                                                | 3400                                                                                | 193                                                                                 |
| Grp Volume(v), veh/h         | 24                                                                                | 0                                                                                 | 295                                                                               | 82                                                                                | 79                                                                                | 71                                                                                | 75                                                                                 | 134                                                                                 | 132                                                                                 | 119                                                                                 | 117                                                                                 | 123                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 0                                                                                 | 1696                                                                              | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                               | 1770                                                                                | 1642                                                                                | 1774                                                                                | 1770                                                                                | 1824                                                                                |
| Q Serve(g_s), s              | 0.5                                                                               | 0.0                                                                               | 7.7                                                                               | 2.1                                                                               | 1.9                                                                               | 2.0                                                                               | 2.0                                                                                | 3.3                                                                                 | 3.5                                                                                 | 3.1                                                                                 | 2.7                                                                                 | 2.8                                                                                 |
| Cycle Q Clear(g_c), s        | 0.5                                                                               | 0.0                                                                               | 7.7                                                                               | 2.1                                                                               | 1.9                                                                               | 2.0                                                                               | 2.0                                                                                | 3.3                                                                                 | 3.5                                                                                 | 3.1                                                                                 | 2.7                                                                                 | 2.8                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.50                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.76                                                                                | 1.00                                                                                |                                                                                     | 0.11                                                                                |
| Lane Grp Cap(c), veh/h       | 418                                                                               | 0                                                                                 | 399                                                                               | 169                                                                               | 177                                                                               | 151                                                                               | 95                                                                                 | 287                                                                                 | 266                                                                                 | 155                                                                                 | 347                                                                                 | 357                                                                                 |
| V/C Ratio(X)                 | 0.06                                                                              | 0.00                                                                              | 0.74                                                                              | 0.49                                                                              | 0.45                                                                              | 0.47                                                                              | 0.79                                                                               | 0.47                                                                                | 0.50                                                                                | 0.77                                                                                | 0.34                                                                                | 0.34                                                                                |
| Avail Cap(c_a), veh/h        | 857                                                                               | 0                                                                                 | 820                                                                               | 671                                                                               | 704                                                                               | 599                                                                               | 335                                                                                | 669                                                                                 | 621                                                                                 | 410                                                                                 | 744                                                                                 | 766                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 14.1                                                                              | 0.0                                                                               | 16.8                                                                              | 20.4                                                                              | 20.4                                                                              | 20.4                                                                              | 22.3                                                                               | 18.1                                                                                | 18.2                                                                                | 21.2                                                                                | 16.5                                                                                | 16.5                                                                                |
| Incr Delay (d2), s/veh       | 0.1                                                                               | 0.0                                                                               | 2.7                                                                               | 2.2                                                                               | 1.8                                                                               | 2.3                                                                               | 13.6                                                                               | 1.2                                                                                 | 1.4                                                                                 | 7.7                                                                                 | 0.6                                                                                 | 0.6                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.2                                                                               | 0.0                                                                               | 3.8                                                                               | 1.1                                                                               | 1.1                                                                               | 1.0                                                                               | 1.3                                                                                | 1.7                                                                                 | 1.7                                                                                 | 1.9                                                                                 | 1.4                                                                                 | 1.4                                                                                 |
| LnGrp Delay(d),s/veh         | 14.2                                                                              | 0.0                                                                               | 19.5                                                                              | 22.6                                                                              | 22.1                                                                              | 22.7                                                                              | 35.9                                                                               | 19.3                                                                                | 19.6                                                                                | 29.0                                                                                | 17.1                                                                                | 17.1                                                                                |
| LnGrp LOS                    | B                                                                                 |                                                                                   | B                                                                                 | C                                                                                 | C                                                                                 | C                                                                                 | D                                                                                  | B                                                                                   | B                                                                                   | C                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 319                                                                               |                                                                                   |                                                                                   | 232                                                                               |                                                                                   |                                                                                    | 341                                                                                 |                                                                                     |                                                                                     | 359                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 19.1                                                                              |                                                                                   |                                                                                   | 22.5                                                                              |                                                                                   |                                                                                    | 23.1                                                                                |                                                                                     |                                                                                     | 21.0                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 9.2                                                                               | 12.7                                                                              |                                                                                   | 16.2                                                                              | 7.5                                                                               | 14.3                                                                              |                                                                                    | 9.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |                                                                                    | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 11.0                                                                              | 18.0                                                                              |                                                                                   | 23.0                                                                              | 9.0                                                                               | 20.0                                                                              |                                                                                    | 18.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 5.1                                                                               | 5.5                                                                               |                                                                                   | 9.7                                                                               | 4.0                                                                               | 4.8                                                                               |                                                                                    | 4.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 2.2                                                                               |                                                                                   | 1.6                                                                               | 0.1                                                                               | 2.4                                                                               |                                                                                    | 0.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 21.4                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 9: West Bernardo Dr & Via Del Campo

3/24/2016

|                              |  |  |  |  |  |  |   |   |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|---|
| Movement                     | EBL                                                                               | EBT                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                               |   |   |
| Lane Configurations          |  |  |  |                                                                                   |  |  |   |   |
| Traffic Volume (veh/h)       | 32                                                                                | 402                                                                               | 438                                                                               | 38                                                                                | 148                                                                               | 346                                                                               |   |   |
| Future Volume (veh/h)        | 32                                                                                | 402                                                                               | 438                                                                               | 38                                                                                | 148                                                                               | 346                                                                               |   |   |
| Number                       | 5                                                                                 | 2                                                                                 | 6                                                                                 | 16                                                                                | 7                                                                                 | 14                                                                                |   |   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |   |   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              |   |   |
| Adj Flow Rate, veh/h         | 37                                                                                | 467                                                                               | 509                                                                               | 44                                                                                | 172                                                                               | 402                                                                               |   |   |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 |   |   |
| Peak Hour Factor             | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              |   |   |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |   |
| Cap, veh/h                   | 50                                                                                | 2067                                                                              | 1651                                                                              | 142                                                                               | 511                                                                               | 456                                                                               |   |   |
| Arrive On Green              | 0.03                                                                              | 0.58                                                                              | 0.50                                                                              | 0.50                                                                              | 0.29                                                                              | 0.29                                                                              |   |   |
| Sat Flow, veh/h              | 1774                                                                              | 3632                                                                              | 3391                                                                              | 284                                                                               | 1774                                                                              | 1583                                                                              |   |   |
| Grp Volume(v), veh/h         | 37                                                                                | 467                                                                               | 272                                                                               | 281                                                                               | 172                                                                               | 402                                                                               |   |   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1770                                                                              | 1813                                                                              | 1774                                                                              | 1583                                                                              |   |   |
| Q Serve(g_s), s              | 1.6                                                                               | 5.0                                                                               | 7.2                                                                               | 7.3                                                                               | 6.1                                                                               | 19.3                                                                              |   |   |
| Cycle Q Clear(g_c), s        | 1.6                                                                               | 5.0                                                                               | 7.2                                                                               | 7.3                                                                               | 6.1                                                                               | 19.3                                                                              |   |   |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   | 0.16                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Lane Grp Cap(c), veh/h       | 50                                                                                | 2067                                                                              | 886                                                                               | 908                                                                               | 511                                                                               | 456                                                                               |   |   |
| V/C Ratio(X)                 | 0.74                                                                              | 0.23                                                                              | 0.31                                                                              | 0.31                                                                              | 0.34                                                                              | 0.88                                                                              |   |   |
| Avail Cap(c_a), veh/h        | 281                                                                               | 2067                                                                              | 886                                                                               | 908                                                                               | 742                                                                               | 662                                                                               |   |   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Uniform Delay (d), s/veh     | 38.4                                                                              | 7.9                                                                               | 11.7                                                                              | 11.7                                                                              | 22.4                                                                              | 27.1                                                                              |   |   |
| Incr Delay (d2), s/veh       | 19.3                                                                              | 0.3                                                                               | 0.9                                                                               | 0.9                                                                               | 0.4                                                                               | 9.6                                                                               |   |   |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |   |
| %ile BackOfQ(50%),veh/ln     | 1.1                                                                               | 2.5                                                                               | 3.7                                                                               | 3.8                                                                               | 3.0                                                                               | 16.4                                                                              |   |   |
| LnGrp Delay(d),s/veh         | 57.7                                                                              | 8.2                                                                               | 12.6                                                                              | 12.6                                                                              | 22.7                                                                              | 36.7                                                                              |   |   |
| LnGrp LOS                    | E                                                                                 | A                                                                                 | B                                                                                 | B                                                                                 | C                                                                                 | D                                                                                 |   |   |
| Approach Vol, veh/h          |                                                                                   | 504                                                                               | 553                                                                               |                                                                                   | 574                                                                               |                                                                                   |   |   |
| Approach Delay, s/veh        |                                                                                   | 11.8                                                                              | 12.6                                                                              |                                                                                   | 32.5                                                                              |                                                                                   |   |   |
| Approach LOS                 |                                                                                   | B                                                                                 | B                                                                                 |                                                                                   | C                                                                                 |                                                                                   |   |   |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8 |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |   |   |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 52.0                                                                              |                                                                                   | 27.6                                                                              | 6.6                                                                               | 45.4                                                                              |   |   |
| Change Period (Y+Rc), s      |                                                                                   | 5.5                                                                               |                                                                                   | * 4.7                                                                             | 4.4                                                                               | 5.5                                                                               |   |   |
| Max Green Setting (Gmax), s  |                                                                                   | 46.5                                                                              |                                                                                   | * 33                                                                              | 12.6                                                                              | 29.5                                                                              |   |   |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 7.0                                                                               |                                                                                   | 21.3                                                                              | 3.6                                                                               | 9.3                                                                               |   |   |
| Green Ext Time (p_c), s      |                                                                                   | 7.2                                                                               |                                                                                   | 1.6                                                                               | 0.0                                                                               | 6.1                                                                               |   |   |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 19.4                                                                              |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |   |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |

# HCM 2010 Signalized Intersection Summary

## 10: Bernardo Center Dr & West Bernardo Dr

3/24/2016

|                              |  |  |  |  |  |  |  |      |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|
| Movement                     | EBL                                                                               | EBT                                                                               | WBU                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                                 |      |
| Lane Configurations          |  |  |  |  |  |  |  |      |
| Traffic Volume (veh/h)       | 413                                                                               | 385                                                                               | 0                                                                                 | 369                                                                               | 352                                                                               | 335                                                                               | 475                                                                                 |      |
| Future Volume (veh/h)        | 413                                                                               | 385                                                                               | 0                                                                                 | 369                                                                               | 352                                                                               | 335                                                                               | 475                                                                                 |      |
| Number                       | 1                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 12                                                                                | 3                                                                                 | 18                                                                                  |      |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   |      |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              |                                                                                   | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                                |      |
| Adj Flow Rate, veh/h         | 439                                                                               | 410                                                                               |                                                                                   | 393                                                                               | 374                                                                               | 356                                                                               | 505                                                                                 |      |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                   |      |
| Peak Hour Factor             | 0.94                                                                              | 0.94                                                                              |                                                                                   | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                                |      |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   |      |
| Cap, veh/h                   | 583                                                                               | 1934                                                                              |                                                                                   | 586                                                                               | 1745                                                                              | 554                                                                               | 763                                                                                 |      |
| Arrive On Green              | 0.17                                                                              | 0.55                                                                              |                                                                                   | 0.31                                                                              | 0.31                                                                              | 0.31                                                                              | 0.31                                                                                |      |
| Sat Flow, veh/h              | 3442                                                                              | 3632                                                                              |                                                                                   | 1863                                                                              | 2782                                                                              | 1774                                                                              | 1583                                                                                |      |
| Grp Volume(v), veh/h         | 439                                                                               | 410                                                                               |                                                                                   | 393                                                                               | 374                                                                               | 356                                                                               | 505                                                                                 |      |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1770                                                                              |                                                                                   | 1863                                                                              | 1391                                                                              | 1774                                                                              | 1583                                                                                |      |
| Q Serve(g_s), s              | 8.5                                                                               | 4.2                                                                               |                                                                                   | 12.9                                                                              | 4.1                                                                               | 12.1                                                                              | 17.0                                                                                |      |
| Cycle Q Clear(g_c), s        | 8.5                                                                               | 4.2                                                                               |                                                                                   | 12.9                                                                              | 4.1                                                                               | 12.1                                                                              | 17.0                                                                                |      |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Lane Grp Cap(c), veh/h       | 583                                                                               | 1934                                                                              |                                                                                   | 586                                                                               | 1745                                                                              | 554                                                                               | 763                                                                                 |      |
| V/C Ratio(X)                 | 0.75                                                                              | 0.21                                                                              |                                                                                   | 0.67                                                                              | 0.21                                                                              | 0.64                                                                              | 0.66                                                                                |      |
| Avail Cap(c_a), veh/h        | 1257                                                                              | 3266                                                                              |                                                                                   | 1129                                                                              | 2557                                                                              | 951                                                                               | 1117                                                                                |      |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Uniform Delay (d), s/veh     | 27.7                                                                              | 8.2                                                                               |                                                                                   | 20.9                                                                              | 5.6                                                                               | 20.7                                                                              | 13.8                                                                                |      |
| Incr Delay (d2), s/veh       | 2.0                                                                               | 0.1                                                                               |                                                                                   | 1.3                                                                               | 0.1                                                                               | 1.3                                                                               | 1.0                                                                                 |      |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 |      |
| %ile BackOfQ(50%),veh/ln     | 4.2                                                                               | 2.0                                                                               |                                                                                   | 6.8                                                                               | 1.5                                                                               | 6.1                                                                               | 7.6                                                                                 |      |
| LnGrp Delay(d),s/veh         | 29.7                                                                              | 8.2                                                                               |                                                                                   | 22.2                                                                              | 5.7                                                                               | 22.0                                                                              | 14.8                                                                                |      |
| LnGrp LOS                    | C                                                                                 | A                                                                                 |                                                                                   | C                                                                                 | A                                                                                 | C                                                                                 | B                                                                                   |      |
| Approach Vol, veh/h          |                                                                                   | 849                                                                               |                                                                                   | 767                                                                               |                                                                                   | 861                                                                               |                                                                                     |      |
| Approach Delay, s/veh        |                                                                                   | 19.3                                                                              |                                                                                   | 14.2                                                                              |                                                                                   | 17.8                                                                              |                                                                                     |      |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   | B                                                                                 |                                                                                   | B                                                                                 |                                                                                     |      |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8    |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                     | 8    |
| Phs Duration (G+Y+Rc), s     | 16.3                                                                              | 27.5                                                                              |                                                                                   |                                                                                   |                                                                                   | 43.8                                                                              |                                                                                     | 26.3 |
| Change Period (Y+Rc), s      | 4.4                                                                               | 5.5                                                                               |                                                                                   |                                                                                   |                                                                                   | * 5.5                                                                             |                                                                                     | 4.4  |
| Max Green Setting (Gmax), s  | 25.6                                                                              | 42.5                                                                              |                                                                                   |                                                                                   |                                                                                   | * 65                                                                              |                                                                                     | 37.6 |
| Max Q Clear Time (g_c+I1), s | 10.5                                                                              | 14.9                                                                              |                                                                                   |                                                                                   |                                                                                   | 6.2                                                                               |                                                                                     | 19.0 |
| Green Ext Time (p_c), s      | 1.4                                                                               | 7.1                                                                               |                                                                                   |                                                                                   |                                                                                   | 7.8                                                                               |                                                                                     | 2.9  |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 17.2                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |

## **APPENDIX F**

### **PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS OPENING DAY WITH PROJECT**

# HCM 2010 Signalized Intersection Summary

## 1: Camino San Bernardo & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 0                                                                                 | 943                                                                               | 171                                                                               | 405                                                                               | 730                                                                               | 1                                                                                 | 37                                                                                 | 0                                                                                   | 194                                                                                 | 4                                                                                   | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 0                                                                                 | 943                                                                               | 171                                                                               | 405                                                                               | 730                                                                               | 1                                                                                 | 37                                                                                 | 0                                                                                   | 194                                                                                 | 4                                                                                   | 0                                                                                   | 0                                                                                   |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.98                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.98                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 1025                                                                              | 186                                                                               | 440                                                                               | 793                                                                               | 1                                                                                 | 40                                                                                 | 0                                                                                   | 211                                                                                 | 4                                                                                   | 0                                                                                   | 0                                                                                   |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                  | 2                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 3                                                                                 | 1259                                                                              | 228                                                                               | 556                                                                               | 2364                                                                              | 3                                                                                 | 413                                                                                | 320                                                                                 | 282                                                                                 | 171                                                                                 | 0                                                                                   | 0                                                                                   |
| Arrive On Green              | 0.00                                                                              | 0.42                                                                              | 0.42                                                                              | 0.16                                                                              | 0.65                                                                              | 0.65                                                                              | 0.18                                                                               | 0.00                                                                                | 0.18                                                                                | 0.18                                                                                | 0.00                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 2986                                                                              | 541                                                                               | 3442                                                                              | 3627                                                                              | 5                                                                                 | 1412                                                                               | 1770                                                                                | 1558                                                                                | 339                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Volume(v), veh/h         | 0                                                                                 | 607                                                                               | 604                                                                               | 440                                                                               | 387                                                                               | 407                                                                               | 40                                                                                 | 0                                                                                   | 211                                                                                 | 4                                                                                   | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1757                                                                              | 1721                                                                              | 1770                                                                              | 1862                                                                              | 1412                                                                               | 1770                                                                                | 1558                                                                                | 339                                                                                 | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.0                                                                               | 19.8                                                                              | 19.9                                                                              | 8.1                                                                               | 6.4                                                                               | 6.4                                                                               | 0.0                                                                                | 0.0                                                                                 | 8.4                                                                                 | 0.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 19.8                                                                              | 19.9                                                                              | 8.1                                                                               | 6.4                                                                               | 6.4                                                                               | 1.2                                                                                | 0.0                                                                                 | 8.4                                                                                 | 8.7                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.31                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.00                                                                                |
| Lane Grp Cap(c), veh/h       | 3                                                                                 | 746                                                                               | 741                                                                               | 556                                                                               | 1153                                                                              | 1214                                                                              | 413                                                                                | 320                                                                                 | 282                                                                                 | 171                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.00                                                                              | 0.81                                                                              | 0.82                                                                              | 0.79                                                                              | 0.34                                                                              | 0.34                                                                              | 0.10                                                                               | 0.00                                                                                | 0.75                                                                                | 0.02                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 135                                                                               | 861                                                                               | 855                                                                               | 706                                                                               | 1153                                                                              | 1214                                                                              | 780                                                                                | 780                                                                                 | 687                                                                                 | 474                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 16.7                                                                              | 16.8                                                                              | 26.5                                                                              | 5.1                                                                               | 5.1                                                                               | 22.6                                                                               | 0.0                                                                                 | 25.5                                                                                | 29.6                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 5.3                                                                               | 5.5                                                                               | 4.8                                                                               | 0.2                                                                               | 0.2                                                                               | 0.1                                                                                | 0.0                                                                                 | 4.0                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 10.7                                                                              | 10.7                                                                              | 4.2                                                                               | 3.2                                                                               | 3.3                                                                               | 0.6                                                                                | 0.0                                                                                 | 3.9                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 22.0                                                                              | 22.2                                                                              | 31.3                                                                              | 5.3                                                                               | 5.3                                                                               | 22.7                                                                               | 0.0                                                                                 | 29.5                                                                                | 29.7                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    |                                                                                   | C                                                                                 | C                                                                                 | C                                                                                 | A                                                                                 | A                                                                                 | C                                                                                  |                                                                                     | C                                                                                   | C                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1211                                                                              |                                                                                   |                                                                                   | 1234                                                                              |                                                                                   |                                                                                    | 251                                                                                 |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 22.1                                                                              |                                                                                   |                                                                                   | 14.5                                                                              |                                                                                   |                                                                                    | 28.4                                                                                |                                                                                     |                                                                                     | 29.7                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 15.1                                                                              | 33.7                                                                              |                                                                                   | 16.9                                                                              | 0.0                                                                               | 48.9                                                                              |                                                                                    | 16.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 6.0                                                                               |                                                                                   | 5.0                                                                               | 4.5                                                                               | 6.0                                                                               |                                                                                    | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 13.5                                                                              | 32.0                                                                              |                                                                                   | 29.0                                                                              | 5.0                                                                               | 40.5                                                                              |                                                                                    | 29.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 10.1                                                                              | 21.9                                                                              |                                                                                   | 10.7                                                                              | 0.0                                                                               | 8.4                                                                               |                                                                                    | 10.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.5                                                                               | 5.8                                                                               |                                                                                   | 1.2                                                                               | 0.0                                                                               | 15.5                                                                              |                                                                                    | 1.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 19.3                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# HCM 2010 Signalized Intersection Summary

## 2: Via Del Campo & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 4                                                                                 | 952                                                                               | 302                                                                               | 602                                                                               | 1251                                                                              | 0                                                                                 | 59                                                                                 | 0                                                                                   | 43                                                                                  | 1                                                                                   | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 4                                                                                 | 952                                                                               | 302                                                                               | 602                                                                               | 1251                                                                              | 0                                                                                 | 59                                                                                 | 0                                                                                   | 43                                                                                  | 1                                                                                   | 0                                                                                   | 0                                                                                   |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.98                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.98                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1900                                                                               | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 4                                                                                 | 1070                                                                              | 339                                                                               | 676                                                                               | 1406                                                                              | 0                                                                                 | 66                                                                                 | 0                                                                                   | 48                                                                                  | 1                                                                                   | 0                                                                                   | 0                                                                                   |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 0                                                                                  | 1                                                                                   | 1                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                               | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 7                                                                                 | 1084                                                                              | 339                                                                               | 650                                                                               | 2737                                                                              | 0                                                                                 | 176                                                                                | 0                                                                                   | 98                                                                                  | 110                                                                                 | 0                                                                                   | 0                                                                                   |
| Arrive On Green              | 0.00                                                                              | 0.41                                                                              | 0.41                                                                              | 0.37                                                                              | 0.77                                                                              | 0.00                                                                              | 0.06                                                                               | 0.00                                                                                | 0.06                                                                                | 0.06                                                                                | 0.00                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 2638                                                                              | 826                                                                               | 1774                                                                              | 3632                                                                              | 0                                                                                 | 1620                                                                               | 0                                                                                   | 1559                                                                                | 569                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Volume(v), veh/h         | 4                                                                                 | 713                                                                               | 696                                                                               | 676                                                                               | 1406                                                                              | 0                                                                                 | 66                                                                                 | 0                                                                                   | 48                                                                                  | 1                                                                                   | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1694                                                                              | 1774                                                                              | 1770                                                                              | 0                                                                                 | 1620                                                                               | 0                                                                                   | 1559                                                                                | 569                                                                                 | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.2                                                                               | 38.6                                                                              | 39.8                                                                              | 35.6                                                                              | 14.5                                                                              | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 2.9                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.2                                                                               | 38.6                                                                              | 39.8                                                                              | 35.6                                                                              | 14.5                                                                              | 0.0                                                                               | 3.5                                                                                | 0.0                                                                                 | 2.9                                                                                 | 3.6                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.49                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.00                                                                                |
| Lane Grp Cap(c), veh/h       | 7                                                                                 | 727                                                                               | 696                                                                               | 650                                                                               | 2737                                                                              | 0                                                                                 | 176                                                                                | 0                                                                                   | 98                                                                                  | 110                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.54                                                                              | 0.98                                                                              | 1.00                                                                              | 1.04                                                                              | 0.51                                                                              | 0.00                                                                              | 0.38                                                                               | 0.00                                                                                | 0.49                                                                                | 0.01                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 73                                                                                | 727                                                                               | 696                                                                               | 650                                                                               | 2737                                                                              | 0                                                                                 | 508                                                                                | 0                                                                                   | 466                                                                                 | 433                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 48.2                                                                              | 28.2                                                                              | 28.6                                                                              | 30.7                                                                              | 4.1                                                                               | 0.0                                                                               | 44.3                                                                               | 0.0                                                                                 | 44.0                                                                                | 46.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 48.6                                                                              | 28.5                                                                              | 33.8                                                                              | 45.9                                                                              | 0.2                                                                               | 0.0                                                                               | 1.3                                                                                | 0.0                                                                                 | 3.8                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.2                                                                               | 24.6                                                                              | 25.1                                                                              | 25.6                                                                              | 6.9                                                                               | 0.0                                                                               | 1.8                                                                                | 0.0                                                                                 | 1.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 96.9                                                                              | 56.8                                                                              | 62.4                                                                              | 76.6                                                                              | 4.3                                                                               | 0.0                                                                               | 45.6                                                                               | 0.0                                                                                 | 47.8                                                                                | 46.1                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | F                                                                                 | E                                                                                 | E                                                                                 | F                                                                                 | A                                                                                 |                                                                                   | D                                                                                  |                                                                                     | D                                                                                   | D                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1413                                                                              |                                                                                   |                                                                                   | 2082                                                                              |                                                                                   |                                                                                    | 114                                                                                 |                                                                                     |                                                                                     | 1                                                                                   |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 59.7                                                                              |                                                                                   |                                                                                   | 27.8                                                                              |                                                                                   |                                                                                    | 46.5                                                                                |                                                                                     |                                                                                     | 46.1                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 40.0                                                                              | 45.8                                                                              |                                                                                   | 11.3                                                                              | 4.8                                                                               | 81.0                                                                              |                                                                                    | 11.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.4                                                                               | 5.9                                                                               |                                                                                   | * 5.2                                                                             | 4.4                                                                               | * 5.9                                                                             |                                                                                    | 5.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 35.6                                                                              | 39.9                                                                              |                                                                                   | * 29                                                                              | 4.0                                                                               | * 72                                                                              |                                                                                    | 29.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 37.6                                                                              | 41.8                                                                              |                                                                                   | 5.6                                                                               | 2.2                                                                               | 16.5                                                                              |                                                                                    | 5.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.4                                                                               | 0.0                                                                               | 36.0                                                                              |                                                                                    | 0.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 40.9                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 3: Project Dwy/Matinal Rd & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 33                                                                                | 784                                                                               | 78                                                                                | 240                                                                               | 1602                                                                              | 17                                                                                | 19                                                                                 | 2                                                                                   | 60                                                                                  | 84                                                                                  | 6                                                                                   | 141                                                                                 |
| Future Volume (veh/h)        | 33                                                                                | 784                                                                               | 78                                                                                | 240                                                                               | 1602                                                                              | 17                                                                                | 19                                                                                 | 2                                                                                   | 60                                                                                  | 84                                                                                  | 6                                                                                   | 141                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.98                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 38                                                                                | 901                                                                               | 90                                                                                | 276                                                                               | 1841                                                                              | 20                                                                                | 22                                                                                 | 2                                                                                   | 69                                                                                  | 97                                                                                  | 7                                                                                   | 162                                                                                 |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                  | 1                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.87                                                                              | 0.87                                                                              | 0.87                                                                              | 0.87                                                                              | 0.87                                                                              | 0.87                                                                              | 0.87                                                                               | 0.87                                                                                | 0.87                                                                                | 0.87                                                                                | 0.87                                                                                | 0.87                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 48                                                                                | 1577                                                                              | 158                                                                               | 276                                                                               | 2201                                                                              | 24                                                                                | 239                                                                                | 10                                                                                  | 335                                                                                 | 141                                                                                 | 21                                                                                  | 183                                                                                 |
| Arrive On Green              | 0.03                                                                              | 0.49                                                                              | 0.49                                                                              | 0.16                                                                              | 0.61                                                                              | 0.61                                                                              | 0.22                                                                               | 0.22                                                                                | 0.22                                                                                | 0.22                                                                                | 0.22                                                                                | 0.22                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 3250                                                                              | 325                                                                               | 1774                                                                              | 3587                                                                              | 39                                                                                | 1211                                                                               | 45                                                                                  | 1545                                                                                | 446                                                                                 | 97                                                                                  | 844                                                                                 |
| Grp Volume(v), veh/h         | 38                                                                                | 491                                                                               | 500                                                                               | 276                                                                               | 907                                                                               | 954                                                                               | 22                                                                                 | 0                                                                                   | 71                                                                                  | 266                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1805                                                                              | 1774                                                                              | 1770                                                                              | 1856                                                                              | 1211                                                                               | 0                                                                                   | 1590                                                                                | 1386                                                                                | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 2.3                                                                               | 21.6                                                                              | 21.6                                                                              | 17.0                                                                              | 44.4                                                                              | 44.7                                                                              | 0.0                                                                                | 0.0                                                                                 | 4.0                                                                                 | 16.6                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 2.3                                                                               | 21.6                                                                              | 21.6                                                                              | 17.0                                                                              | 44.4                                                                              | 44.7                                                                              | 2.6                                                                                | 0.0                                                                                 | 4.0                                                                                 | 20.6                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.18                                                                              | 1.00                                                                              |                                                                                   | 0.02                                                                              | 1.00                                                                               |                                                                                     | 0.97                                                                                | 0.36                                                                                |                                                                                     | 0.61                                                                                |
| Lane Grp Cap(c), veh/h       | 48                                                                                | 859                                                                               | 876                                                                               | 276                                                                               | 1086                                                                              | 1139                                                                              | 239                                                                                | 0                                                                                   | 344                                                                                 | 345                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.79                                                                              | 0.57                                                                              | 0.57                                                                              | 1.00                                                                              | 0.84                                                                              | 0.84                                                                              | 0.09                                                                               | 0.00                                                                                | 0.21                                                                                | 0.77                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 81                                                                                | 955                                                                               | 974                                                                               | 276                                                                               | 1166                                                                              | 1222                                                                              | 297                                                                                | 0                                                                                   | 422                                                                                 | 409                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 52.9                                                                              | 20.0                                                                              | 20.0                                                                              | 46.2                                                                              | 16.7                                                                              | 16.8                                                                              | 34.6                                                                               | 0.0                                                                                 | 35.1                                                                                | 42.1                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 24.2                                                                              | 0.7                                                                               | 0.6                                                                               | 54.3                                                                              | 5.1                                                                               | 5.0                                                                               | 0.2                                                                                | 0.0                                                                                 | 0.3                                                                                 | 7.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 1.5                                                                               | 10.6                                                                              | 10.9                                                                              | 12.4                                                                              | 23.0                                                                              | 24.1                                                                              | 0.5                                                                                | 0.0                                                                                 | 1.8                                                                                 | 8.5                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 77.1                                                                              | 20.7                                                                              | 20.7                                                                              | 100.5                                                                             | 21.9                                                                              | 21.8                                                                              | 34.7                                                                               | 0.0                                                                                 | 35.4                                                                                | 49.4                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | E                                                                                 | C                                                                                 | C                                                                                 | F                                                                                 | C                                                                                 | C                                                                                 | C                                                                                  |                                                                                     | D                                                                                   | D                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1029                                                                              |                                                                                   |                                                                                   | 2137                                                                              |                                                                                   |                                                                                    | 93                                                                                  |                                                                                     |                                                                                     | 266                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 22.8                                                                              |                                                                                   |                                                                                   | 32.0                                                                              |                                                                                   |                                                                                    | 35.2                                                                                |                                                                                     |                                                                                     | 49.4                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 21.0                                                                              | 60.0                                                                              |                                                                                   | 28.3                                                                              | 7.0                                                                               | 74.1                                                                              |                                                                                    | 28.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 7.0                                                                               |                                                                                   | 4.6                                                                               | 4.0                                                                               | * 7                                                                               |                                                                                    | * 4.6                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 17.0                                                                              | 59.0                                                                              |                                                                                   | 28.4                                                                              | 5.0                                                                               | * 72                                                                              |                                                                                    | * 29                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 19.0                                                                              | 23.6                                                                              |                                                                                   | 22.6                                                                              | 4.3                                                                               | 46.7                                                                              |                                                                                    | 6.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 26.6                                                                              |                                                                                   | 1.1                                                                               | 0.0                                                                               | 20.4                                                                              |                                                                                    | 2.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 30.7                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 4: West Bernardo Dr & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 44                                                                                | 688                                                                               | 81                                                                                | 566                                                                               | 1697                                                                              | 271                                                                               | 126                                                                                 | 86                                                                                  | 124                                                                                 | 643                                                                                 | 312                                                                                 | 174                                                                                 |
| Future Volume (veh/h)        | 44                                                                                | 688                                                                               | 81                                                                                | 566                                                                               | 1697                                                                              | 271                                                                               | 126                                                                                 | 86                                                                                  | 124                                                                                 | 643                                                                                 | 312                                                                                 | 174                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                   | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                                |                                                                                     | 0.99                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 45                                                                                | 709                                                                               | 84                                                                                | 584                                                                               | 1749                                                                              | 279                                                                               | 130                                                                                 | 89                                                                                  | 128                                                                                 | 663                                                                                 | 322                                                                                 | 179                                                                                 |
| Adj No. of Lanes             | 2                                                                                 | 3                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 | 1                                                                                 | 2                                                                                   | 2                                                                                   | 1                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 96                                                                                | 988                                                                               | 116                                                                               | 855                                                                               | 1589                                                                              | 701                                                                               | 206                                                                                 | 391                                                                                 | 566                                                                                 | 764                                                                                 | 603                                                                                 | 328                                                                                 |
| Arrive On Green              | 0.03                                                                              | 0.21                                                                              | 0.21                                                                              | 0.25                                                                              | 0.45                                                                              | 0.45                                                                              | 0.06                                                                                | 0.11                                                                                | 0.11                                                                                | 0.22                                                                                | 0.27                                                                                | 0.27                                                                                |
| Sat Flow, veh/h              | 3442                                                                              | 4615                                                                              | 542                                                                               | 3442                                                                              | 3539                                                                              | 1562                                                                              | 3442                                                                                | 3539                                                                                | 1561                                                                                | 3442                                                                                | 2212                                                                                | 1202                                                                                |
| Grp Volume(v), veh/h         | 45                                                                                | 519                                                                               | 274                                                                               | 584                                                                               | 1749                                                                              | 279                                                                               | 130                                                                                 | 89                                                                                  | 128                                                                                 | 663                                                                                 | 256                                                                                 | 245                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1695                                                                              | 1767                                                                              | 1721                                                                              | 1770                                                                              | 1562                                                                              | 1721                                                                                | 1770                                                                                | 1561                                                                                | 1721                                                                                | 1770                                                                                | 1644                                                                                |
| Q Serve(g_s), s              | 1.3                                                                               | 14.8                                                                              | 15.0                                                                              | 16.0                                                                              | 46.9                                                                              | 12.5                                                                              | 3.9                                                                                 | 2.4                                                                                 | 2.5                                                                                 | 19.4                                                                                | 12.9                                                                                | 13.3                                                                                |
| Cycle Q Clear(g_c), s        | 1.3                                                                               | 14.8                                                                              | 15.0                                                                              | 16.0                                                                              | 46.9                                                                              | 12.5                                                                              | 3.9                                                                                 | 2.4                                                                                 | 2.5                                                                                 | 19.4                                                                                | 12.9                                                                                | 13.3                                                                                |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.31                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.73                                                                                |
| Lane Grp Cap(c), veh/h       | 96                                                                                | 726                                                                               | 378                                                                               | 855                                                                               | 1589                                                                              | 701                                                                               | 206                                                                                 | 391                                                                                 | 566                                                                                 | 764                                                                                 | 482                                                                                 | 448                                                                                 |
| V/C Ratio(X)                 | 0.47                                                                              | 0.72                                                                              | 0.72                                                                              | 0.68                                                                              | 1.10                                                                              | 0.40                                                                              | 0.63                                                                                | 0.23                                                                                | 0.23                                                                                | 0.87                                                                                | 0.53                                                                                | 0.55                                                                                |
| Avail Cap(c_a), veh/h        | 132                                                                               | 1237                                                                              | 645                                                                               | 855                                                                               | 1589                                                                              | 701                                                                               | 1124                                                                                | 1325                                                                                | 978                                                                                 | 992                                                                                 | 595                                                                                 | 553                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 50.0                                                                              | 38.1                                                                              | 38.2                                                                              | 35.5                                                                              | 28.8                                                                              | 19.3                                                                              | 48.0                                                                                | 42.4                                                                                | 8.1                                                                                 | 39.2                                                                                | 32.3                                                                                | 32.5                                                                                |
| Incr Delay (d2), s/veh       | 3.5                                                                               | 1.3                                                                               | 2.6                                                                               | 2.2                                                                               | 55.4                                                                              | 0.4                                                                               | 3.1                                                                                 | 0.3                                                                                 | 0.2                                                                                 | 6.7                                                                                 | 0.9                                                                                 | 1.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.7                                                                               | 7.1                                                                               | 7.6                                                                               | 7.9                                                                               | 35.0                                                                              | 5.5                                                                               | 1.9                                                                                 | 1.2                                                                                 | 1.4                                                                                 | 9.9                                                                                 | 6.4                                                                                 | 6.2                                                                                 |
| LnGrp Delay(d),s/veh         | 53.5                                                                              | 39.4                                                                              | 40.8                                                                              | 37.8                                                                              | 84.2                                                                              | 19.7                                                                              | 51.1                                                                                | 42.7                                                                                | 8.3                                                                                 | 45.8                                                                                | 33.2                                                                                | 33.5                                                                                |
| LnGrp LOS                    | D                                                                                 | D                                                                                 | D                                                                                 | D                                                                                 | F                                                                                 | B                                                                                 | D                                                                                   | D                                                                                   | A                                                                                   | D                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 838                                                                               |                                                                                   |                                                                                   | 2612                                                                              |                                                                                   |                                                                                     | 347                                                                                 |                                                                                     |                                                                                     | 1164                                                                                |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 40.6                                                                              |                                                                                   |                                                                                   | 66.9                                                                              |                                                                                   |                                                                                     | 33.2                                                                                |                                                                                     |                                                                                     | 40.5                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 31.6                                                                              | 28.3                                                                              | 10.7                                                                              | 33.9                                                                              | 7.3                                                                               | 52.6                                                                              | 27.6                                                                                | 17.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.7                                                                               | * 5.9                                                                             | 4.4                                                                               | 5.4                                                                               | 4.4                                                                               | 5.7                                                                               | 4.4                                                                                 | 5.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 12.6                                                                              | * 38                                                                              | 34.1                                                                              | 35.1                                                                              | 4.0                                                                               | 46.9                                                                              | 30.1                                                                                | 39.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 18.0                                                                              | 17.0                                                                              | 5.9                                                                               | 15.3                                                                              | 3.3                                                                               | 48.9                                                                              | 21.4                                                                                | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 5.3                                                                               | 0.4                                                                               | 4.1                                                                               | 0.0                                                                               | 0.0                                                                               | 1.8                                                                                 | 4.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 53.9                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 5: I-15 SB Ramps & Rancho Bernardo Rd

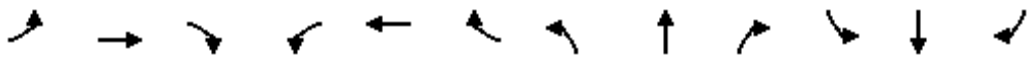
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|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |                                                                                   |  |  |                                                                                    |                                                                                     |                                                                                     |  |                                                                                     |  |
| Traffic Volume (veh/h)       | 0                                                                                 | 799                                                                               | 598                                                                               | 0                                                                                 | 1379                                                                              | 505                                                                               | 0                                                                                  | 0                                                                                   | 0                                                                                   | 659                                                                                 | 0                                                                                   | 1200                                                                                |
| Future Volume (veh/h)        | 0                                                                                 | 799                                                                               | 598                                                                               | 0                                                                                 | 1379                                                                              | 505                                                                               | 0                                                                                  | 0                                                                                   | 0                                                                                   | 659                                                                                 | 0                                                                                   | 1200                                                                                |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                |                                                                                    |                                                                                     |                                                                                     | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 0                                                                                 | 1863                                                                              | 1863                                                                              | 0                                                                                 | 1863                                                                              | 1863                                                                              |                                                                                    |                                                                                     |                                                                                     | 1863                                                                                | 0                                                                                   | 1863                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 822                                                                               | 642                                                                               | 0                                                                                 | 1452                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 694                                                                                 | 0                                                                                   | 1263                                                                                |
| Adj No. of Lanes             | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 3                                                                                 | 1                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 2                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.95                                                                              | 0.95                                                                              | 0.92                                                                              | 0.95                                                                              | 0.95                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.95                                                                                | 0.92                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %         | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 0                                                                                 | 1584                                                                              | 1347                                                                              | 0                                                                                 | 2376                                                                              | 673                                                                               |                                                                                    |                                                                                     |                                                                                     | 1671                                                                                | 0                                                                                   | 1353                                                                                |
| Arrive On Green              | 0.00                                                                              | 0.43                                                                              | 0.43                                                                              | 0.00                                                                              | 0.57                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.49                                                                                | 0.00                                                                                | 0.49                                                                                |
| Sat Flow, veh/h              | 0                                                                                 | 3725                                                                              | 3167                                                                              | 0                                                                                 | 5588                                                                              | 1583                                                                              |                                                                                    |                                                                                     |                                                                                     | 3442                                                                                | 0                                                                                   | 2787                                                                                |
| Grp Volume(v), veh/h         | 0                                                                                 | 822                                                                               | 642                                                                               | 0                                                                                 | 1452                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 694                                                                                 | 0                                                                                   | 1263                                                                                |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1863                                                                              | 1583                                                                              | 0                                                                                 | 1863                                                                              | 1583                                                                              |                                                                                    |                                                                                     |                                                                                     | 1721                                                                                | 0                                                                                   | 1393                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 22.8                                                                              | 20.5                                                                              | 0.0                                                                               | 24.1                                                                              | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 18.2                                                                                | 0.0                                                                                 | 59.7                                                                                |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 22.8                                                                              | 20.5                                                                              | 0.0                                                                               | 24.1                                                                              | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 18.2                                                                                | 0.0                                                                                 | 59.7                                                                                |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 1.00                                                                              | 0.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 1584                                                                              | 1347                                                                              | 0                                                                                 | 2376                                                                              | 673                                                                               |                                                                                    |                                                                                     |                                                                                     | 1671                                                                                | 0                                                                                   | 1353                                                                                |
| V/C Ratio(X)                 | 0.00                                                                              | 0.52                                                                              | 0.48                                                                              | 0.00                                                                              | 0.61                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.42                                                                                | 0.00                                                                                | 0.93                                                                                |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 1584                                                                              | 1347                                                                              | 0                                                                                 | 2376                                                                              | 673                                                                               |                                                                                    |                                                                                     |                                                                                     | 1768                                                                                | 0                                                                                   | 1431                                                                                |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.33                                                                              | 1.33                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.00                                                                              | 0.63                                                                              | 0.63                                                                              | 0.00                                                                              | 0.82                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 29.7                                                                              | 29.0                                                                              | 0.0                                                                               | 22.7                                                                              | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 23.2                                                                                | 0.0                                                                                 | 33.9                                                                                |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.8                                                                               | 0.8                                                                               | 0.0                                                                               | 1.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.2                                                                                 | 0.0                                                                                 | 11.1                                                                                |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 11.9                                                                              | 9.1                                                                               | 0.0                                                                               | 12.6                                                                              | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 8.7                                                                                 | 0.0                                                                                 | 25.1                                                                                |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 30.4                                                                              | 29.8                                                                              | 0.0                                                                               | 23.7                                                                              | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 23.4                                                                                | 0.0                                                                                 | 45.0                                                                                |
| LnGrp LOS                    |                                                                                   | C                                                                                 | C                                                                                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     | C                                                                                   |                                                                                     | D                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 1464                                                                              |                                                                                   |                                                                                   | 1452                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 1957                                                                                |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 30.1                                                                              |                                                                                   |                                                                                   | 23.7                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 37.3                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 65.9                                                                              |                                                                                   | 74.1                                                                              |                                                                                   | 65.9                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 6.4                                                                               |                                                                                   | 6.1                                                                               |                                                                                   | 6.4                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 55.6                                                                              |                                                                                   | 71.9                                                                              |                                                                                   | 55.6                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 24.8                                                                              |                                                                                   | 61.7                                                                              |                                                                                   | 26.1                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 23.7                                                                              |                                                                                   | 6.2                                                                               |                                                                                   | 22.9                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 31.1                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 6: I-15 NB Ramps & Rancho Bernardo Rd

3/24/2016

|                              |  |      |      |      |      |      |      |      |      |     |     |     |
|------------------------------|------------------------------------------------------------------------------------|------|------|------|------|------|------|------|------|-----|-----|-----|
| Movement                     | EBL                                                                                | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL | SBT | SBR |
| Lane Configurations          |                                                                                    | ↑↑↑  | ↑    |      | ↑↑↑  | ↑    | ↑↑   |      | ↑↑   |     |     |     |
| Traffic Volume (veh/h)       | 0                                                                                  | 846  | 613  | 0    | 1126 | 285  | 758  | 0    | 433  | 0   | 0   | 0   |
| Future Volume (veh/h)        | 0                                                                                  | 846  | 613  | 0    | 1126 | 285  | 758  | 0    | 433  | 0   | 0   | 0   |
| Number                       | 5                                                                                  | 2    | 12   | 1    | 6    | 16   | 3    | 8    | 18   |     |     |     |
| Initial Q (Qb), veh          | 0                                                                                  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |     |     |     |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                               |      | 1.00 | 1.00 |      | 1.00 | 1.00 |      | 1.00 |     |     |     |
| Parking Bus, Adj             | 1.00                                                                               | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |     |     |     |
| Adj Sat Flow, veh/h/ln       | 0                                                                                  | 1863 | 1863 | 0    | 1863 | 1863 | 1863 | 0    | 1863 |     |     |     |
| Adj Flow Rate, veh/h         | 0                                                                                  | 900  | 0    | 0    | 1198 | 303  | 806  | 0    | 461  |     |     |     |
| Adj No. of Lanes             | 0                                                                                  | 3    | 1    | 0    | 3    | 1    | 2    | 0    | 2    |     |     |     |
| Peak Hour Factor             | 0.92                                                                               | 0.94 | 0.94 | 0.92 | 0.94 | 0.94 | 0.94 | 0.92 | 0.94 |     |     |     |
| Percent Heavy Veh, %         | 0                                                                                  | 2    | 2    | 0    | 2    | 2    | 2    | 0    | 2    |     |     |     |
| Cap, veh/h                   | 0                                                                                  | 3551 | 1006 | 0    | 3232 | 1006 | 947  | 0    | 767  |     |     |     |
| Arrive On Green              | 0.00                                                                               | 1.00 | 0.00 | 0.00 | 0.64 | 0.64 | 0.28 | 0.00 | 0.28 |     |     |     |
| Sat Flow, veh/h              | 0                                                                                  | 5588 | 1583 | 0    | 5253 | 1583 | 3442 | 0    | 2787 |     |     |     |
| Grp Volume(v), veh/h         | 0                                                                                  | 900  | 0    | 0    | 1198 | 303  | 806  | 0    | 461  |     |     |     |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                  | 1863 | 1583 | 0    | 1695 | 1583 | 1721 | 0    | 1393 |     |     |     |
| Q Serve(g_s), s              | 0.0                                                                                | 0.0  | 0.0  | 0.0  | 15.7 | 12.1 | 31.0 | 0.0  | 20.1 |     |     |     |
| Cycle Q Clear(g_c), s        | 0.0                                                                                | 0.0  | 0.0  | 0.0  | 15.7 | 12.1 | 31.0 | 0.0  | 20.1 |     |     |     |
| Prop In Lane                 | 0.00                                                                               |      | 1.00 | 0.00 |      | 1.00 | 1.00 |      | 1.00 |     |     |     |
| Lane Grp Cap(c), veh/h       | 0                                                                                  | 3551 | 1006 | 0    | 3232 | 1006 | 947  | 0    | 767  |     |     |     |
| V/C Ratio(X)                 | 0.00                                                                               | 0.25 | 0.00 | 0.00 | 0.37 | 0.30 | 0.85 | 0.00 | 0.60 |     |     |     |
| Avail Cap(c_a), veh/h        | 0                                                                                  | 3551 | 1006 | 0    | 3232 | 1006 | 1399 | 0    | 1133 |     |     |     |
| HCM Platoon Ratio            | 1.00                                                                               | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |     |     |     |
| Upstream Filter(I)           | 0.00                                                                               | 0.84 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |     |     |     |
| Uniform Delay (d), s/veh     | 0.0                                                                                | 0.0  | 0.0  | 0.0  | 12.2 | 11.5 | 48.0 | 0.0  | 44.1 |     |     |     |
| Incr Delay (d2), s/veh       | 0.0                                                                                | 0.1  | 0.0  | 0.0  | 0.3  | 0.8  | 3.5  | 0.0  | 0.8  |     |     |     |
| Initial Q Delay(d3),s/veh    | 0.0                                                                                | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |     |     |     |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                                | 0.0  | 0.0  | 0.0  | 7.4  | 5.4  | 15.2 | 0.0  | 7.8  |     |     |     |
| LnGrp Delay(d),s/veh         | 0.0                                                                                | 0.1  | 0.0  | 0.0  | 12.5 | 12.3 | 51.5 | 0.0  | 44.8 |     |     |     |
| LnGrp LOS                    |                                                                                    | A    |      |      | B    | B    | D    |      | D    |     |     |     |
| Approach Vol, veh/h          |                                                                                    | 900  |      |      | 1501 |      |      | 1267 |      |     |     |     |
| Approach Delay, s/veh        |                                                                                    | 0.1  |      |      | 12.5 |      |      | 49.1 |      |     |     |     |
| Approach LOS                 |                                                                                    | A    |      |      | B    |      |      | D    |      |     |     |     |
| Timer                        | 1                                                                                  | 2    | 3    | 4    | 5    | 6    | 7    | 8    |      |     |     |     |
| Assigned Phs                 |                                                                                    | 2    |      |      |      | 6    |      | 8    |      |     |     |     |
| Phs Duration (G+Y+Rc), s     |                                                                                    | 95.4 |      |      |      | 95.4 |      | 44.6 |      |     |     |     |
| Change Period (Y+Rc), s      |                                                                                    | 6.4  |      |      |      | 6.4  |      | 6.1  |      |     |     |     |
| Max Green Setting (Gmax), s  |                                                                                    | 70.6 |      |      |      | 70.6 |      | 56.9 |      |     |     |     |
| Max Q Clear Time (g_c+I1), s |                                                                                    | 2.0  |      |      |      | 17.7 |      | 33.0 |      |     |     |     |
| Green Ext Time (p_c), s      |                                                                                    | 30.3 |      |      |      | 27.2 |      | 5.5  |      |     |     |     |
| <b>Intersection Summary</b>  |                                                                                    |      |      |      |      |      |      |      |      |     |     |     |
| HCM 2010 Ctrl Delay          |                                                                                    |      | 22.1 |      |      |      |      |      |      |     |     |     |
| HCM 2010 LOS                 |                                                                                    |      | C    |      |      |      |      |      |      |     |     |     |
| <b>Notes</b>                 |                                                                                    |      |      |      |      |      |      |      |      |     |     |     |

# HCM 2010 Signalized Intersection Summary

## 7: Bernardo Center Dr & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |                                                                                   |  |  |                                                                                     |  |  |  |
| Traffic Volume (veh/h)       | 321                                                                               | 600                                                                               | 302                                                                               | 163                                                                               | 841                                                                               | 85                                                                                | 265                                                                                | 188                                                                                 | 109                                                                                 | 185                                                                                 | 247                                                                                 | 117                                                                                 |
| Future Volume (veh/h)        | 321                                                                               | 600                                                                               | 302                                                                               | 163                                                                               | 841                                                                               | 85                                                                                | 265                                                                                | 188                                                                                 | 109                                                                                 | 185                                                                                 | 247                                                                                 | 117                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                               |                                                                                     | 0.99                                                                                | 1.00                                                                                |                                                                                     | 0.99                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h         | 345                                                                               | 648                                                                               | 323                                                                               | 175                                                                               | 904                                                                               | 91                                                                                | 285                                                                                | 202                                                                                 | 117                                                                                 | 199                                                                                 | 266                                                                                 | 126                                                                                 |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 | 1                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                  | 2                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                               | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 435                                                                               | 1555                                                                              | 661                                                                               | 255                                                                               | 1196                                                                              | 120                                                                               | 364                                                                                | 401                                                                                 | 222                                                                                 | 283                                                                                 | 563                                                                                 | 442                                                                                 |
| Arrive On Green              | 0.12                                                                              | 0.42                                                                              | 0.42                                                                              | 0.07                                                                              | 0.37                                                                              | 0.37                                                                              | 0.11                                                                               | 0.18                                                                                | 0.18                                                                                | 0.08                                                                                | 0.16                                                                                | 0.16                                                                                |
| Sat Flow, veh/h              | 3548                                                                              | 3725                                                                              | 1583                                                                              | 3442                                                                              | 3243                                                                              | 326                                                                               | 3442                                                                               | 2193                                                                                | 1214                                                                                | 3442                                                                                | 3539                                                                                | 1560                                                                                |
| Grp Volume(v), veh/h         | 345                                                                               | 648                                                                               | 323                                                                               | 175                                                                               | 493                                                                               | 502                                                                               | 285                                                                                | 161                                                                                 | 158                                                                                 | 199                                                                                 | 266                                                                                 | 126                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1721                                                                              | 1770                                                                              | 1799                                                                              | 1721                                                                               | 1770                                                                                | 1637                                                                                | 1721                                                                                | 1770                                                                                | 1560                                                                                |
| Q Serve(g_s), s              | 8.1                                                                               | 10.5                                                                              | 12.8                                                                              | 4.3                                                                               | 20.9                                                                              | 20.9                                                                              | 6.9                                                                                | 7.0                                                                                 | 7.5                                                                                 | 4.8                                                                                 | 5.9                                                                                 | 5.4                                                                                 |
| Cycle Q Clear(g_c), s        | 8.1                                                                               | 10.5                                                                              | 12.8                                                                              | 4.3                                                                               | 20.9                                                                              | 20.9                                                                              | 6.9                                                                                | 7.0                                                                                 | 7.5                                                                                 | 4.8                                                                                 | 5.9                                                                                 | 5.4                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.18                                                                              | 1.00                                                                               |                                                                                     | 0.74                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 435                                                                               | 1555                                                                              | 661                                                                               | 255                                                                               | 653                                                                               | 664                                                                               | 364                                                                                | 323                                                                                 | 299                                                                                 | 283                                                                                 | 563                                                                                 | 442                                                                                 |
| V/C Ratio(X)                 | 0.79                                                                              | 0.42                                                                              | 0.49                                                                              | 0.69                                                                              | 0.76                                                                              | 0.76                                                                              | 0.78                                                                               | 0.50                                                                                | 0.53                                                                                | 0.70                                                                                | 0.47                                                                                | 0.28                                                                                |
| Avail Cap(c_a), veh/h        | 562                                                                               | 1623                                                                              | 690                                                                               | 445                                                                               | 738                                                                               | 751                                                                               | 425                                                                                | 802                                                                                 | 742                                                                                 | 493                                                                                 | 1649                                                                                | 921                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 36.6                                                                              | 17.6                                                                              | 18.3                                                                              | 38.8                                                                              | 23.7                                                                              | 23.7                                                                              | 37.4                                                                               | 31.5                                                                                | 31.7                                                                                | 38.4                                                                                | 32.8                                                                                | 24.1                                                                                |
| Incr Delay (d2), s/veh       | 5.9                                                                               | 0.2                                                                               | 0.6                                                                               | 3.2                                                                               | 4.0                                                                               | 3.9                                                                               | 7.9                                                                                | 1.2                                                                                 | 1.4                                                                                 | 3.2                                                                                 | 0.6                                                                                 | 0.3                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 4.3                                                                               | 5.4                                                                               | 5.7                                                                               | 2.1                                                                               | 10.9                                                                              | 11.0                                                                              | 3.7                                                                                | 3.6                                                                                 | 3.5                                                                                 | 2.4                                                                                 | 2.9                                                                                 | 2.4                                                                                 |
| LnGrp Delay(d),s/veh         | 42.5                                                                              | 17.8                                                                              | 18.9                                                                              | 42.0                                                                              | 27.6                                                                              | 27.6                                                                              | 45.3                                                                               | 32.7                                                                                | 33.2                                                                                | 41.6                                                                                | 33.4                                                                                | 24.4                                                                                |
| LnGrp LOS                    | D                                                                                 | B                                                                                 | B                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                  | C                                                                                   | C                                                                                   | D                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h          | 1316                                                                              |                                                                                   |                                                                                   |                                                                                   | 1170                                                                              |                                                                                   |                                                                                    |                                                                                     | 604                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 24.5                                                                              |                                                                                   |                                                                                   |                                                                                   | 29.8                                                                              |                                                                                   |                                                                                    |                                                                                     | 38.8                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 10.8                                                                              | 42.0                                                                              | 13.5                                                                              | 19.5                                                                              | 14.9                                                                              | 37.9                                                                              | 11.5                                                                               | 21.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.4                                                                               | 6.2                                                                               | 4.4                                                                               | 5.9                                                                               | 4.4                                                                               | * 6.2                                                                             | 4.4                                                                                | * 5.9                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 11.1                                                                              | 37.4                                                                              | 10.6                                                                              | 40.0                                                                              | 13.6                                                                              | * 36                                                                              | 12.3                                                                               | * 39                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 6.3                                                                               | 14.8                                                                              | 8.9                                                                               | 7.9                                                                               | 10.1                                                                              | 22.9                                                                              | 6.8                                                                                | 9.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.2                                                                               | 12.6                                                                              | 0.2                                                                               | 4.1                                                                               | 0.4                                                                               | 8.7                                                                               | 0.3                                                                                | 4.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          | 30.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 8: West Bernardo Dr & Duenda Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |                                                                                     |  |  |                                                                                     |
| Traffic Volume (veh/h)       | 20                                                                                | 170                                                                               | 152                                                                               | 102                                                                               | 51                                                                                | 40                                                                                | 31                                                                                 | 100                                                                                 | 74                                                                                  | 97                                                                                  | 218                                                                                 | 10                                                                                  |
| Future Volume (veh/h)        | 20                                                                                | 170                                                                               | 152                                                                               | 102                                                                               | 51                                                                                | 40                                                                                | 31                                                                                 | 100                                                                                 | 74                                                                                  | 97                                                                                  | 218                                                                                 | 10                                                                                  |
| Number                       | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                  | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 22                                                                                | 185                                                                               | 165                                                                               | 111                                                                               | 55                                                                                | 43                                                                                | 34                                                                                 | 109                                                                                 | 80                                                                                  | 105                                                                                 | 237                                                                                 | 11                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                  | 2                                                                                   | 0                                                                                   | 1                                                                                   | 2                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 463                                                                               | 236                                                                               | 210                                                                               | 189                                                                               | 198                                                                               | 169                                                                               | 54                                                                                 | 278                                                                                 | 189                                                                                 | 136                                                                                 | 634                                                                                 | 29                                                                                  |
| Arrive On Green              | 0.26                                                                              | 0.26                                                                              | 0.26                                                                              | 0.11                                                                              | 0.11                                                                              | 0.11                                                                              | 0.03                                                                               | 0.14                                                                                | 0.14                                                                                | 0.08                                                                                | 0.18                                                                                | 0.18                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 902                                                                               | 805                                                                               | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                               | 2018                                                                                | 1372                                                                                | 1774                                                                                | 3445                                                                                | 159                                                                                 |
| Grp Volume(v), veh/h         | 22                                                                                | 0                                                                                 | 350                                                                               | 111                                                                               | 55                                                                                | 43                                                                                | 34                                                                                 | 94                                                                                  | 95                                                                                  | 105                                                                                 | 121                                                                                 | 127                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 0                                                                                 | 1707                                                                              | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                               | 1770                                                                                | 1621                                                                                | 1774                                                                                | 1770                                                                                | 1835                                                                                |
| Q Serve(g_s), s              | 0.4                                                                               | 0.0                                                                               | 9.1                                                                               | 2.9                                                                               | 1.3                                                                               | 1.2                                                                               | 0.9                                                                                | 2.3                                                                                 | 2.6                                                                                 | 2.8                                                                                 | 2.9                                                                                 | 2.9                                                                                 |
| Cycle Q Clear(g_c), s        | 0.4                                                                               | 0.0                                                                               | 9.1                                                                               | 2.9                                                                               | 1.3                                                                               | 1.2                                                                               | 0.9                                                                                | 2.3                                                                                 | 2.6                                                                                 | 2.8                                                                                 | 2.9                                                                                 | 2.9                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.47                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.85                                                                                | 1.00                                                                                |                                                                                     | 0.09                                                                                |
| Lane Grp Cap(c), veh/h       | 463                                                                               | 0                                                                                 | 446                                                                               | 189                                                                               | 198                                                                               | 169                                                                               | 54                                                                                 | 244                                                                                 | 223                                                                                 | 136                                                                                 | 326                                                                                 | 338                                                                                 |
| V/C Ratio(X)                 | 0.05                                                                              | 0.00                                                                              | 0.79                                                                              | 0.59                                                                              | 0.28                                                                              | 0.25                                                                              | 0.63                                                                               | 0.39                                                                                | 0.42                                                                                | 0.77                                                                                | 0.37                                                                                | 0.38                                                                                |
| Avail Cap(c_a), veh/h        | 704                                                                               | 0                                                                                 | 677                                                                               | 778                                                                               | 817                                                                               | 695                                                                               | 185                                                                                | 739                                                                                 | 677                                                                                 | 371                                                                                 | 924                                                                                 | 958                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 13.2                                                                              | 0.0                                                                               | 16.4                                                                              | 20.4                                                                              | 19.7                                                                              | 19.6                                                                              | 22.9                                                                               | 18.8                                                                                | 18.9                                                                                | 21.7                                                                                | 17.1                                                                                | 17.1                                                                                |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.0                                                                               | 3.5                                                                               | 2.9                                                                               | 0.7                                                                               | 0.8                                                                               | 11.5                                                                               | 1.0                                                                                 | 1.3                                                                                 | 9.0                                                                                 | 0.7                                                                                 | 0.7                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.2                                                                               | 0.0                                                                               | 4.7                                                                               | 1.5                                                                               | 0.7                                                                               | 0.6                                                                               | 0.6                                                                                | 1.2                                                                                 | 1.2                                                                                 | 1.7                                                                                 | 1.4                                                                                 | 1.5                                                                                 |
| LnGrp Delay(d),s/veh         | 13.3                                                                              | 0.0                                                                               | 19.9                                                                              | 23.3                                                                              | 20.4                                                                              | 20.4                                                                              | 34.5                                                                               | 19.8                                                                                | 20.2                                                                                | 30.7                                                                                | 17.8                                                                                | 17.8                                                                                |
| LnGrp LOS                    | B                                                                                 |                                                                                   | B                                                                                 | C                                                                                 | C                                                                                 | C                                                                                 | C                                                                                  | B                                                                                   | C                                                                                   | C                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 372                                                                               |                                                                                   |                                                                                   | 209                                                                               |                                                                                   |                                                                                    | 223                                                                                 |                                                                                     |                                                                                     | 353                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 19.5                                                                              |                                                                                   |                                                                                   | 21.9                                                                              |                                                                                   |                                                                                    | 22.2                                                                                |                                                                                     |                                                                                     | 21.6                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 8.7                                                                               | 11.6                                                                              |                                                                                   | 17.5                                                                              | 6.5                                                                               | 13.8                                                                              |                                                                                    | 10.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |                                                                                    | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 10.0                                                                              | 20.0                                                                              |                                                                                   | 19.0                                                                              | 5.0                                                                               | 25.0                                                                              |                                                                                    | 21.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 4.8                                                                               | 4.6                                                                               |                                                                                   | 11.1                                                                              | 2.9                                                                               | 4.9                                                                               |                                                                                    | 4.9                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 2.1                                                                               |                                                                                   | 1.4                                                                               | 0.0                                                                               | 2.3                                                                               |                                                                                    | 0.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 21.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# HCM 2010 Signalized Intersection Summary

## 9: West Bernardo Dr & Via Del Campo

3/24/2016

|                              |  |  |  |  |  |  |   |   |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|---|
| Movement                     | EBL                                                                               | EBT                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                               |   |   |
| Lane Configurations          |  |  |  |                                                                                   |  |  |   |   |
| Traffic Volume (veh/h)       | 391                                                                               | 514                                                                               | 273                                                                               | 150                                                                               | 47                                                                                | 51                                                                                |   |   |
| Future Volume (veh/h)        | 391                                                                               | 514                                                                               | 273                                                                               | 150                                                                               | 47                                                                                | 51                                                                                |   |   |
| Number                       | 5                                                                                 | 2                                                                                 | 6                                                                                 | 16                                                                                | 7                                                                                 | 14                                                                                |   |   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |   |   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              |   |   |
| Adj Flow Rate, veh/h         | 460                                                                               | 605                                                                               | 321                                                                               | 176                                                                               | 55                                                                                | 60                                                                                |   |   |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 |   |   |
| Peak Hour Factor             | 0.85                                                                              | 0.85                                                                              | 0.85                                                                              | 0.85                                                                              | 0.85                                                                              | 0.85                                                                              |   |   |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |   |
| Cap, veh/h                   | 940                                                                               | 2823                                                                              | 426                                                                               | 228                                                                               | 109                                                                               | 97                                                                                |   |   |
| Arrive On Green              | 0.53                                                                              | 0.80                                                                              | 0.19                                                                              | 0.19                                                                              | 0.06                                                                              | 0.06                                                                              |   |   |
| Sat Flow, veh/h              | 1774                                                                              | 3632                                                                              | 2318                                                                              | 1193                                                                              | 1774                                                                              | 1583                                                                              |   |   |
| Grp Volume(v), veh/h         | 460                                                                               | 605                                                                               | 254                                                                               | 243                                                                               | 55                                                                                | 60                                                                                |   |   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1770                                                                              | 1649                                                                              | 1774                                                                              | 1583                                                                              |   |   |
| Q Serve(g_s), s              | 11.9                                                                              | 3.0                                                                               | 9.8                                                                               | 10.1                                                                              | 2.2                                                                               | 2.7                                                                               |   |   |
| Cycle Q Clear(g_c), s        | 11.9                                                                              | 3.0                                                                               | 9.8                                                                               | 10.1                                                                              | 2.2                                                                               | 2.7                                                                               |   |   |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   | 0.72                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Lane Grp Cap(c), veh/h       | 940                                                                               | 2823                                                                              | 339                                                                               | 316                                                                               | 109                                                                               | 97                                                                                |   |   |
| V/C Ratio(X)                 | 0.49                                                                              | 0.21                                                                              | 0.75                                                                              | 0.77                                                                              | 0.51                                                                              | 0.62                                                                              |   |   |
| Avail Cap(c_a), veh/h        | 940                                                                               | 2823                                                                              | 482                                                                               | 449                                                                               | 542                                                                               | 484                                                                               |   |   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Uniform Delay (d), s/veh     | 10.8                                                                              | 1.8                                                                               | 27.6                                                                              | 27.7                                                                              | 32.9                                                                              | 33.1                                                                              |   |   |
| Incr Delay (d2), s/veh       | 0.4                                                                               | 0.2                                                                               | 4.0                                                                               | 5.1                                                                               | 3.6                                                                               | 6.2                                                                               |   |   |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |   |
| %ile BackOfQ(50%),veh/ln     | 5.9                                                                               | 1.5                                                                               | 5.2                                                                               | 5.0                                                                               | 1.2                                                                               | 2.5                                                                               |   |   |
| LnGrp Delay(d),s/veh         | 11.2                                                                              | 2.0                                                                               | 31.6                                                                              | 32.9                                                                              | 36.5                                                                              | 39.4                                                                              |   |   |
| LnGrp LOS                    | B                                                                                 | A                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | D                                                                                 |   |   |
| Approach Vol, veh/h          |                                                                                   | 1065                                                                              | 497                                                                               |                                                                                   | 115                                                                               |                                                                                   |   |   |
| Approach Delay, s/veh        |                                                                                   | 5.9                                                                               | 32.2                                                                              |                                                                                   | 38.0                                                                              |                                                                                   |   |   |
| Approach LOS                 |                                                                                   | A                                                                                 | C                                                                                 |                                                                                   | D                                                                                 |                                                                                   |   |   |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8 |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |   |   |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 63.2                                                                              |                                                                                   | 9.1                                                                               | 43.8                                                                              | 19.4                                                                              |   |   |
| Change Period (Y+Rc), s      |                                                                                   | 5.5                                                                               |                                                                                   | * 4.7                                                                             | 5.5                                                                               | * 5.5                                                                             |   |   |
| Max Green Setting (Gmax), s  |                                                                                   | 57.7                                                                              |                                                                                   | * 22                                                                              | 33.6                                                                              | * 20                                                                              |   |   |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 5.0                                                                               |                                                                                   | 4.7                                                                               | 13.9                                                                              | 12.1                                                                              |   |   |
| Green Ext Time (p_c), s      |                                                                                   | 6.1                                                                               |                                                                                   | 0.3                                                                               | 5.3                                                                               | 1.7                                                                               |   |   |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 15.9                                                                              |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |   |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |

# HCM 2010 Signalized Intersection Summary

## 10: Bernardo Center Dr & West Bernardo Dr

3/24/2016

|                              |  |  |  |  |  |  |  |      |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|
| Movement                     | EBL                                                                               | EBT                                                                               | WBU                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                                 |      |
| Lane Configurations          |  |  |  |  |  |  |  |      |
| Traffic Volume (veh/h)       | 618                                                                               | 450                                                                               | 0                                                                                 | 484                                                                               | 699                                                                               | 59                                                                                | 190                                                                                 |      |
| Future Volume (veh/h)        | 618                                                                               | 450                                                                               | 0                                                                                 | 484                                                                               | 699                                                                               | 59                                                                                | 190                                                                                 |      |
| Number                       | 1                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 12                                                                                | 3                                                                                 | 18                                                                                  |      |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   |      |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.97                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              |                                                                                   | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                                |      |
| Adj Flow Rate, veh/h         | 694                                                                               | 506                                                                               |                                                                                   | 544                                                                               | 785                                                                               | 66                                                                                | 213                                                                                 |      |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                   |      |
| Peak Hour Factor             | 0.89                                                                              | 0.89                                                                              |                                                                                   | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                                |      |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   |      |
| Cap, veh/h                   | 851                                                                               | 2586                                                                              |                                                                                   | 789                                                                               | 1525                                                                              | 238                                                                               | 604                                                                                 |      |
| Arrive On Green              | 0.25                                                                              | 0.73                                                                              |                                                                                   | 0.42                                                                              | 0.42                                                                              | 0.13                                                                              | 0.13                                                                                |      |
| Sat Flow, veh/h              | 3442                                                                              | 3632                                                                              |                                                                                   | 1863                                                                              | 2716                                                                              | 1774                                                                              | 1583                                                                                |      |
| Grp Volume(v), veh/h         | 694                                                                               | 506                                                                               |                                                                                   | 544                                                                               | 785                                                                               | 66                                                                                | 213                                                                                 |      |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1770                                                                              |                                                                                   | 1863                                                                              | 1358                                                                              | 1774                                                                              | 1583                                                                                |      |
| Q Serve(g_s), s              | 14.0                                                                              | 3.3                                                                               |                                                                                   | 17.4                                                                              | 13.2                                                                              | 2.5                                                                               | 7.1                                                                                 |      |
| Cycle Q Clear(g_c), s        | 14.0                                                                              | 3.3                                                                               |                                                                                   | 17.4                                                                              | 13.2                                                                              | 2.5                                                                               | 7.1                                                                                 |      |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Lane Grp Cap(c), veh/h       | 851                                                                               | 2586                                                                              |                                                                                   | 789                                                                               | 1525                                                                              | 238                                                                               | 604                                                                                 |      |
| V/C Ratio(X)                 | 0.82                                                                              | 0.20                                                                              |                                                                                   | 0.69                                                                              | 0.51                                                                              | 0.28                                                                              | 0.35                                                                                |      |
| Avail Cap(c_a), veh/h        | 1342                                                                              | 3343                                                                              |                                                                                   | 1120                                                                              | 2007                                                                              | 798                                                                               | 1103                                                                                |      |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Uniform Delay (d), s/veh     | 26.0                                                                              | 3.1                                                                               |                                                                                   | 17.2                                                                              | 10.1                                                                              | 28.5                                                                              | 16.2                                                                                |      |
| Incr Delay (d2), s/veh       | 2.2                                                                               | 0.0                                                                               |                                                                                   | 1.1                                                                               | 0.3                                                                               | 0.6                                                                               | 0.4                                                                                 |      |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 |      |
| %ile BackOfQ(50%),veh/ln     | 6.9                                                                               | 1.6                                                                               |                                                                                   | 9.2                                                                               | 4.9                                                                               | 1.3                                                                               | 3.1                                                                                 |      |
| LnGrp Delay(d),s/veh         | 28.3                                                                              | 3.1                                                                               |                                                                                   | 18.3                                                                              | 10.4                                                                              | 29.2                                                                              | 16.6                                                                                |      |
| LnGrp LOS                    | C                                                                                 | A                                                                                 |                                                                                   | B                                                                                 | B                                                                                 | C                                                                                 | B                                                                                   |      |
| Approach Vol, veh/h          |                                                                                   | 1200                                                                              |                                                                                   | 1329                                                                              |                                                                                   | 279                                                                               |                                                                                     |      |
| Approach Delay, s/veh        |                                                                                   | 17.7                                                                              |                                                                                   | 13.6                                                                              |                                                                                   | 19.5                                                                              |                                                                                     |      |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   | B                                                                                 |                                                                                   | B                                                                                 |                                                                                     |      |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8    |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                     | 8    |
| Phs Duration (G+Y+Rc), s     | 22.5                                                                              | 36.6                                                                              |                                                                                   |                                                                                   |                                                                                   | 59.1                                                                              |                                                                                     | 14.3 |
| Change Period (Y+Rc), s      | 4.4                                                                               | 5.5                                                                               |                                                                                   |                                                                                   |                                                                                   | * 5.5                                                                             |                                                                                     | 4.4  |
| Max Green Setting (Gmax), s  | 28.6                                                                              | 44.1                                                                              |                                                                                   |                                                                                   |                                                                                   | * 69                                                                              |                                                                                     | 33.0 |
| Max Q Clear Time (g_c+I1), s | 16.0                                                                              | 19.4                                                                              |                                                                                   |                                                                                   |                                                                                   | 5.3                                                                               |                                                                                     | 9.1  |
| Green Ext Time (p_c), s      | 2.2                                                                               | 11.6                                                                              |                                                                                   |                                                                                   |                                                                                   | 15.3                                                                              |                                                                                     | 0.8  |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 15.9                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |

# HCM 2010 Signalized Intersection Summary

## 1: Camino San Bernardo & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 1                                                                                 | 960                                                                               | 208                                                                               | 350                                                                               | 759                                                                               | 0                                                                                 | 109                                                                                | 0                                                                                   | 322                                                                                 | 3                                                                                   | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 1                                                                                 | 960                                                                               | 208                                                                               | 350                                                                               | 759                                                                               | 0                                                                                 | 109                                                                                | 0                                                                                   | 322                                                                                 | 3                                                                                   | 0                                                                                   | 0                                                                                   |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 1                                                                                 | 1000                                                                              | 217                                                                               | 365                                                                               | 791                                                                               | 0                                                                                 | 114                                                                                | 0                                                                                   | 335                                                                                 | 3                                                                                   | 0                                                                                   | 0                                                                                   |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                  | 2                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                               | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 2                                                                                 | 1216                                                                              | 263                                                                               | 458                                                                               | 1957                                                                              | 0                                                                                 | 528                                                                                | 451                                                                                 | 403                                                                                 | 151                                                                                 | 0                                                                                   | 0                                                                                   |
| Arrive On Green              | 0.00                                                                              | 0.42                                                                              | 0.42                                                                              | 0.13                                                                              | 0.55                                                                              | 0.00                                                                              | 0.25                                                                               | 0.00                                                                                | 0.25                                                                                | 0.25                                                                                | 0.00                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 2886                                                                              | 625                                                                               | 3442                                                                              | 3632                                                                              | 0                                                                                 | 1412                                                                               | 1770                                                                                | 1581                                                                                | 222                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Volume(v), veh/h         | 1                                                                                 | 612                                                                               | 605                                                                               | 365                                                                               | 791                                                                               | 0                                                                                 | 114                                                                                | 0                                                                                   | 335                                                                                 | 3                                                                                   | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1742                                                                              | 1721                                                                              | 1770                                                                              | 0                                                                                 | 1412                                                                               | 1770                                                                                | 1581                                                                                | 222                                                                                 | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.0                                                                               | 23.2                                                                              | 23.4                                                                              | 7.8                                                                               | 9.8                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 15.2                                                                                | 0.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 23.2                                                                              | 23.4                                                                              | 7.8                                                                               | 9.8                                                                               | 0.0                                                                               | 3.9                                                                                | 0.0                                                                                 | 15.2                                                                                | 15.4                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.36                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.00                                                                                |
| Lane Grp Cap(c), veh/h       | 2                                                                                 | 746                                                                               | 734                                                                               | 458                                                                               | 1957                                                                              | 0                                                                                 | 528                                                                                | 451                                                                                 | 403                                                                                 | 151                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.41                                                                              | 0.82                                                                              | 0.82                                                                              | 0.80                                                                              | 0.40                                                                              | 0.00                                                                              | 0.22                                                                               | 0.00                                                                                | 0.83                                                                                | 0.02                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 117                                                                               | 804                                                                               | 792                                                                               | 544                                                                               | 1957                                                                              | 0                                                                                 | 708                                                                                | 676                                                                                 | 604                                                                                 | 284                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 37.9                                                                              | 19.4                                                                              | 19.5                                                                              | 31.9                                                                              | 9.8                                                                               | 0.0                                                                               | 22.5                                                                               | 0.0                                                                                 | 26.8                                                                                | 34.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 84.2                                                                              | 6.4                                                                               | 6.7                                                                               | 6.9                                                                               | 0.1                                                                               | 0.0                                                                               | 0.2                                                                                | 0.0                                                                                 | 6.2                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.1                                                                               | 12.6                                                                              | 12.5                                                                              | 4.1                                                                               | 4.8                                                                               | 0.0                                                                               | 1.9                                                                                | 0.0                                                                                 | 7.3                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 122.1                                                                             | 25.8                                                                              | 26.2                                                                              | 38.8                                                                              | 9.9                                                                               | 0.0                                                                               | 22.7                                                                               | 0.0                                                                                 | 32.9                                                                                | 34.1                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | F                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | A                                                                                 |                                                                                   | C                                                                                  |                                                                                     | C                                                                                   | C                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          | 1218                                                                              |                                                                                   | 1156                                                                              |                                                                                   |                                                                                   |                                                                                   | 449                                                                                |                                                                                     |                                                                                     |                                                                                     | 3                                                                                   |                                                                                     |
| Approach Delay, s/veh        | 26.1                                                                              |                                                                                   | 19.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 30.3                                                                               |                                                                                     |                                                                                     |                                                                                     | 34.1                                                                                |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                  |                                                                                     |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 14.1                                                                              | 37.5                                                                              |                                                                                   | 24.3                                                                              | 4.1                                                                               | 47.5                                                                              |                                                                                    | 24.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 5.5                                                                               |                                                                                   | 5.0                                                                               | 4.0                                                                               | 5.5                                                                               |                                                                                    | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 12.0                                                                              | 34.5                                                                              |                                                                                   | 29.0                                                                              | 5.0                                                                               | 41.5                                                                              |                                                                                    | 29.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 9.8                                                                               | 25.4                                                                              |                                                                                   | 17.4                                                                              | 2.0                                                                               | 11.8                                                                              |                                                                                    | 17.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.3                                                                               | 6.6                                                                               |                                                                                   | 1.8                                                                               | 0.0                                                                               | 15.7                                                                              |                                                                                    | 1.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 23.9                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 2: Via Del Campo & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 6                                                                                 | 1353                                                                              | 49                                                                                | 28                                                                                | 946                                                                               | 1                                                                                 | 276                                                                                | 0                                                                                   | 356                                                                                 | 1                                                                                   | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 6                                                                                 | 1353                                                                              | 49                                                                                | 28                                                                                | 946                                                                               | 1                                                                                 | 276                                                                                | 0                                                                                   | 356                                                                                 | 1                                                                                   | 0                                                                                   | 0                                                                                   |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.98                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1900                                                                               | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 7                                                                                 | 1487                                                                              | 54                                                                                | 31                                                                                | 1040                                                                              | 1                                                                                 | 303                                                                                | 0                                                                                   | 391                                                                                 | 1                                                                                   | 0                                                                                   | 0                                                                                   |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 0                                                                                  | 1                                                                                   | 1                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                               | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 13                                                                                | 1723                                                                              | 62                                                                                | 44                                                                                | 1858                                                                              | 2                                                                                 | 551                                                                                | 0                                                                                   | 451                                                                                 | 230                                                                                 | 0                                                                                   | 0                                                                                   |
| Arrive On Green              | 0.01                                                                              | 0.49                                                                              | 0.49                                                                              | 0.02                                                                              | 0.51                                                                              | 0.51                                                                              | 0.29                                                                               | 0.00                                                                                | 0.29                                                                                | 0.29                                                                                | 0.00                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 3484                                                                              | 126                                                                               | 1774                                                                              | 3628                                                                              | 3                                                                                 | 1596                                                                               | 0                                                                                   | 1558                                                                                | 488                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Volume(v), veh/h         | 7                                                                                 | 754                                                                               | 787                                                                               | 31                                                                                | 507                                                                               | 534                                                                               | 303                                                                                | 0                                                                                   | 391                                                                                 | 1                                                                                   | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1840                                                                              | 1774                                                                              | 1770                                                                              | 1862                                                                              | 1596                                                                               | 0                                                                                   | 1558                                                                                | 488                                                                                 | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.3                                                                               | 30.4                                                                              | 30.6                                                                              | 1.4                                                                               | 15.9                                                                              | 15.9                                                                              | 0.0                                                                                | 0.0                                                                                 | 19.3                                                                                | 0.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.3                                                                               | 30.4                                                                              | 30.6                                                                              | 1.4                                                                               | 15.9                                                                              | 15.9                                                                              | 11.9                                                                               | 0.0                                                                                 | 19.3                                                                                | 11.9                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.07                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.00                                                                                |
| Lane Grp Cap(c), veh/h       | 13                                                                                | 875                                                                               | 910                                                                               | 44                                                                                | 906                                                                               | 954                                                                               | 551                                                                                | 0                                                                                   | 451                                                                                 | 230                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.55                                                                              | 0.86                                                                              | 0.87                                                                              | 0.70                                                                              | 0.56                                                                              | 0.56                                                                              | 0.55                                                                               | 0.00                                                                                | 0.87                                                                                | 0.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 88                                                                                | 901                                                                               | 937                                                                               | 90                                                                                | 907                                                                               | 955                                                                               | 652                                                                                | 0                                                                                   | 562                                                                                 | 305                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 40.1                                                                              | 18.0                                                                              | 18.1                                                                              | 39.2                                                                              | 13.5                                                                              | 13.5                                                                              | 24.7                                                                               | 0.0                                                                                 | 27.3                                                                                | 29.7                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 32.0                                                                              | 8.4                                                                               | 8.4                                                                               | 18.5                                                                              | 0.8                                                                               | 0.7                                                                               | 0.9                                                                                | 0.0                                                                                 | 11.5                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.3                                                                               | 16.7                                                                              | 17.4                                                                              | 0.9                                                                               | 7.8                                                                               | 8.2                                                                               | 5.9                                                                                | 0.0                                                                                 | 9.6                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 72.0                                                                              | 26.4                                                                              | 26.4                                                                              | 57.7                                                                              | 14.3                                                                              | 14.2                                                                              | 25.5                                                                               | 0.0                                                                                 | 38.8                                                                                | 29.7                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | E                                                                                 | C                                                                                 | C                                                                                 | E                                                                                 | B                                                                                 | B                                                                                 | C                                                                                  |                                                                                     | D                                                                                   | C                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1548                                                                              |                                                                                   |                                                                                   | 1072                                                                              |                                                                                   |                                                                                    | 694                                                                                 |                                                                                     |                                                                                     | 1                                                                                   |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 26.6                                                                              |                                                                                   |                                                                                   | 15.5                                                                              |                                                                                   |                                                                                    | 33.0                                                                                |                                                                                     |                                                                                     | 29.7                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 6.4                                                                               | 45.9                                                                              |                                                                                   | 28.6                                                                              | 5.0                                                                               | 47.3                                                                              |                                                                                    | 28.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.4                                                                               | 5.9                                                                               |                                                                                   | * 5.2                                                                             | 4.4                                                                               | * 5.9                                                                             |                                                                                    | 5.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 4.1                                                                               | 41.2                                                                              |                                                                                   | * 30                                                                              | 4.0                                                                               | * 42                                                                              |                                                                                    | 29.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 3.4                                                                               | 32.6                                                                              |                                                                                   | 13.9                                                                              | 2.3                                                                               | 17.9                                                                              |                                                                                    | 21.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 7.4                                                                               |                                                                                   | 3.0                                                                               | 0.0                                                                               | 17.3                                                                              |                                                                                    | 2.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 24.4                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 3: Project Dwy/Matinal Rd & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 109                                                                               | 1477                                                                              | 44                                                                                | 135                                                                               | 862                                                                               | 48                                                                                | 29                                                                                 | 2                                                                                   | 91                                                                                  | 41                                                                                  | 4                                                                                   | 105                                                                                 |
| Future Volume (veh/h)        | 109                                                                               | 1477                                                                              | 44                                                                                | 135                                                                               | 862                                                                               | 48                                                                                | 29                                                                                 | 2                                                                                   | 91                                                                                  | 41                                                                                  | 4                                                                                   | 105                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.99                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 121                                                                               | 1641                                                                              | 49                                                                                | 150                                                                               | 958                                                                               | 53                                                                                | 32                                                                                 | 2                                                                                   | 101                                                                                 | 46                                                                                  | 4                                                                                   | 117                                                                                 |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                  | 1                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                               | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 156                                                                               | 1816                                                                              | 54                                                                                | 174                                                                               | 1800                                                                              | 100                                                                               | 279                                                                                | 5                                                                                   | 258                                                                                 | 108                                                                                 | 26                                                                                  | 165                                                                                 |
| Arrive On Green              | 0.09                                                                              | 0.52                                                                              | 0.52                                                                              | 0.10                                                                              | 0.53                                                                              | 0.53                                                                              | 0.17                                                                               | 0.17                                                                                | 0.17                                                                                | 0.17                                                                                | 0.17                                                                                | 0.17                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 3509                                                                              | 105                                                                               | 1774                                                                              | 3410                                                                              | 189                                                                               | 1265                                                                               | 31                                                                                  | 1557                                                                                | 265                                                                                 | 158                                                                                 | 991                                                                                 |
| Grp Volume(v), veh/h         | 121                                                                               | 825                                                                               | 865                                                                               | 150                                                                               | 497                                                                               | 514                                                                               | 32                                                                                 | 0                                                                                   | 103                                                                                 | 167                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1844                                                                              | 1774                                                                              | 1770                                                                              | 1829                                                                              | 1265                                                                               | 0                                                                                   | 1588                                                                                | 1415                                                                                | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 4.8                                                                               | 30.1                                                                              | 30.4                                                                              | 5.9                                                                               | 13.2                                                                              | 13.2                                                                              | 0.0                                                                                | 0.0                                                                                 | 4.1                                                                                 | 4.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 4.8                                                                               | 30.1                                                                              | 30.4                                                                              | 5.9                                                                               | 13.2                                                                              | 13.2                                                                              | 2.0                                                                                | 0.0                                                                                 | 4.1                                                                                 | 8.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.06                                                                              | 1.00                                                                              |                                                                                   | 0.10                                                                              | 1.00                                                                               |                                                                                     | 0.98                                                                                | 0.28                                                                                |                                                                                     | 0.70                                                                                |
| Lane Grp Cap(c), veh/h       | 156                                                                               | 916                                                                               | 954                                                                               | 174                                                                               | 934                                                                               | 965                                                                               | 279                                                                                | 0                                                                                   | 264                                                                                 | 299                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.78                                                                              | 0.90                                                                              | 0.91                                                                              | 0.86                                                                              | 0.53                                                                              | 0.53                                                                              | 0.11                                                                               | 0.00                                                                                | 0.39                                                                                | 0.56                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 323                                                                               | 977                                                                               | 1018                                                                              | 174                                                                               | 934                                                                               | 965                                                                               | 576                                                                                | 0                                                                                   | 636                                                                                 | 634                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 31.9                                                                              | 15.6                                                                              | 15.6                                                                              | 31.7                                                                              | 11.1                                                                              | 11.1                                                                              | 25.7                                                                               | 0.0                                                                                 | 26.6                                                                                | 28.2                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 8.1                                                                               | 10.9                                                                              | 11.0                                                                              | 33.1                                                                              | 0.6                                                                               | 0.6                                                                               | 0.2                                                                                | 0.0                                                                                 | 0.9                                                                                 | 1.6                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 2.7                                                                               | 17.2                                                                              | 18.3                                                                              | 4.5                                                                               | 6.5                                                                               | 6.7                                                                               | 0.6                                                                                | 0.0                                                                                 | 1.9                                                                                 | 3.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 39.9                                                                              | 26.5                                                                              | 26.7                                                                              | 64.9                                                                              | 11.7                                                                              | 11.6                                                                              | 25.8                                                                               | 0.0                                                                                 | 27.5                                                                                | 29.8                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | D                                                                                 | C                                                                                 | C                                                                                 | E                                                                                 | B                                                                                 | B                                                                                 | C                                                                                  |                                                                                     | C                                                                                   | C                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1811                                                                              |                                                                                   |                                                                                   | 1161                                                                              |                                                                                   |                                                                                    | 135                                                                                 |                                                                                     |                                                                                     | 167                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 27.5                                                                              |                                                                                   |                                                                                   | 18.5                                                                              |                                                                                   |                                                                                    | 27.1                                                                                |                                                                                     |                                                                                     | 29.8                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 11.0                                                                              | 43.9                                                                              |                                                                                   | 16.4                                                                              | 10.3                                                                              | 44.7                                                                              |                                                                                    | 16.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 7.0                                                                               |                                                                                   | 4.6                                                                               | 4.0                                                                               | * 7                                                                               |                                                                                    | * 4.6                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 7.0                                                                               | 39.4                                                                              |                                                                                   | 28.0                                                                              | 13.0                                                                              | * 34                                                                              |                                                                                    | * 29                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 7.9                                                                               | 32.4                                                                              |                                                                                   | 10.2                                                                              | 6.8                                                                               | 15.2                                                                              |                                                                                    | 6.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 4.5                                                                               |                                                                                   | 1.7                                                                               | 0.1                                                                               | 15.4                                                                              |                                                                                    | 1.9                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 24.4                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 4: West Bernardo Dr & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |  |  |  |                                                                                     |
| Traffic Volume (veh/h)       | 158                                                                               | 1489                                                                              | 37                                                                                | 176                                                                               | 978                                                                               | 477                                                                               | 147                                                                                 | 322                                                                                 | 629                                                                                 | 327                                                                                 | 66                                                                                  | 70                                                                                  |
| Future Volume (veh/h)        | 158                                                                               | 1489                                                                              | 37                                                                                | 176                                                                               | 978                                                                               | 477                                                                               | 147                                                                                 | 322                                                                                 | 629                                                                                 | 327                                                                                 | 66                                                                                  | 70                                                                                  |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                   | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 161                                                                               | 1519                                                                              | 38                                                                                | 180                                                                               | 998                                                                               | 487                                                                               | 150                                                                                 | 329                                                                                 | 642                                                                                 | 334                                                                                 | 67                                                                                  | 71                                                                                  |
| Adj No. of Lanes             | 2                                                                                 | 3                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 | 1                                                                                 | 2                                                                                   | 2                                                                                   | 1                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 215                                                                               | 1699                                                                              | 43                                                                                | 361                                                                               | 1373                                                                              | 613                                                                               | 218                                                                                 | 931                                                                                 | 581                                                                                 | 414                                                                                 | 566                                                                                 | 506                                                                                 |
| Arrive On Green              | 0.06                                                                              | 0.33                                                                              | 0.33                                                                              | 0.10                                                                              | 0.39                                                                              | 0.39                                                                              | 0.06                                                                                | 0.26                                                                                | 0.26                                                                                | 0.12                                                                                | 0.32                                                                                | 0.32                                                                                |
| Sat Flow, veh/h              | 3442                                                                              | 5103                                                                              | 128                                                                               | 3442                                                                              | 3539                                                                              | 1580                                                                              | 3442                                                                                | 3539                                                                                | 1578                                                                                | 3442                                                                                | 1770                                                                                | 1583                                                                                |
| Grp Volume(v), veh/h         | 161                                                                               | 1009                                                                              | 548                                                                               | 180                                                                               | 998                                                                               | 487                                                                               | 150                                                                                 | 329                                                                                 | 642                                                                                 | 334                                                                                 | 67                                                                                  | 71                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1695                                                                              | 1840                                                                              | 1721                                                                              | 1770                                                                              | 1580                                                                              | 1721                                                                                | 1770                                                                                | 1578                                                                                | 1721                                                                                | 1770                                                                                | 1583                                                                                |
| Q Serve(g_s), s              | 5.5                                                                               | 33.8                                                                              | 33.8                                                                              | 5.9                                                                               | 28.7                                                                              | 32.6                                                                              | 5.1                                                                                 | 9.0                                                                                 | 25.0                                                                                | 11.3                                                                                | 3.2                                                                                 | 3.8                                                                                 |
| Cycle Q Clear(g_c), s        | 5.5                                                                               | 33.8                                                                              | 33.8                                                                              | 5.9                                                                               | 28.7                                                                              | 32.6                                                                              | 5.1                                                                                 | 9.0                                                                                 | 25.0                                                                                | 11.3                                                                                | 3.2                                                                                 | 3.8                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.07                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 215                                                                               | 1129                                                                              | 613                                                                               | 361                                                                               | 1373                                                                              | 613                                                                               | 218                                                                                 | 931                                                                                 | 581                                                                                 | 414                                                                                 | 566                                                                                 | 506                                                                                 |
| V/C Ratio(X)                 | 0.75                                                                              | 0.89                                                                              | 0.89                                                                              | 0.50                                                                              | 0.73                                                                              | 0.79                                                                              | 0.69                                                                                | 0.35                                                                                | 1.11                                                                                | 0.81                                                                                | 0.12                                                                                | 0.14                                                                                |
| Avail Cap(c_a), veh/h        | 227                                                                               | 1165                                                                              | 633                                                                               | 420                                                                               | 1421                                                                              | 634                                                                               | 982                                                                                 | 1157                                                                                | 682                                                                                 | 866                                                                                 | 566                                                                                 | 506                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 55.1                                                                              | 37.9                                                                              | 37.9                                                                              | 50.5                                                                              | 31.2                                                                              | 32.4                                                                              | 54.8                                                                                | 35.8                                                                                | 22.1                                                                                | 51.2                                                                                | 28.8                                                                                | 29.0                                                                                |
| Incr Delay (d2), s/veh       | 12.1                                                                              | 8.9                                                                               | 14.9                                                                              | 1.1                                                                               | 1.8                                                                               | 6.8                                                                               | 3.8                                                                                 | 0.2                                                                                 | 67.9                                                                                | 3.8                                                                                 | 0.1                                                                                 | 0.1                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 3.0                                                                               | 17.2                                                                              | 19.7                                                                              | 2.9                                                                               | 14.3                                                                              | 15.4                                                                              | 2.6                                                                                 | 4.5                                                                                 | 25.0                                                                                | 5.6                                                                                 | 1.6                                                                                 | 1.7                                                                                 |
| LnGrp Delay(d),s/veh         | 67.2                                                                              | 46.8                                                                              | 52.8                                                                              | 51.6                                                                              | 33.0                                                                              | 39.1                                                                              | 58.6                                                                                | 36.0                                                                                | 90.0                                                                                | 55.0                                                                                | 28.8                                                                                | 29.1                                                                                |
| LnGrp LOS                    | E                                                                                 | D                                                                                 | D                                                                                 | D                                                                                 | C                                                                                 | D                                                                                 | E                                                                                   | D                                                                                   | F                                                                                   | E                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 1718                                                                              |                                                                                   |                                                                                   | 1665                                                                              |                                                                                   |                                                                                     | 1121                                                                                |                                                                                     |                                                                                     | 472                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 50.6                                                                              |                                                                                   |                                                                                   | 36.8                                                                              |                                                                                   |                                                                                     | 70.0                                                                                |                                                                                     |                                                                                     | 47.4                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                     | E                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 18.2                                                                              | 45.7                                                                              | 12.0                                                                              | 43.6                                                                              | 11.9                                                                              | 52.1                                                                              | 18.8                                                                                | 36.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.7                                                                               | * 5.9                                                                             | 4.4                                                                               | 5.4                                                                               | 4.4                                                                               | 5.7                                                                               | 4.4                                                                                 | 5.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 14.6                                                                              | * 41                                                                              | 34.1                                                                              | 35.1                                                                              | 7.9                                                                               | 48.0                                                                              | 30.1                                                                                | 39.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 7.9                                                                               | 35.8                                                                              | 7.1                                                                               | 5.8                                                                               | 7.5                                                                               | 34.6                                                                              | 13.3                                                                                | 27.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 4.7                                                                               | 4.0                                                                               | 0.5                                                                               | 6.3                                                                               | 0.0                                                                               | 7.9                                                                               | 1.1                                                                                 | 4.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 50.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 5: I-15 SB Ramps & Rancho Bernardo Rd

3/24/2016

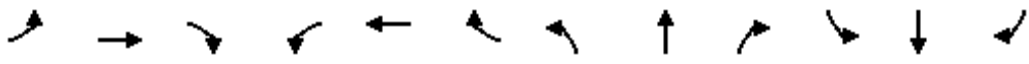
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|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |                                                                                   |  |  |                                                                                    |                                                                                     |                                                                                     |  |                                                                                     |  |
| Traffic Volume (veh/h)       | 0                                                                                 | 1571                                                                              | 872                                                                               | 0                                                                                 | 1143                                                                              | 559                                                                               | 0                                                                                  | 0                                                                                   | 0                                                                                   | 409                                                                                 | 0                                                                                   | 450                                                                                 |
| Future Volume (veh/h)        | 0                                                                                 | 1571                                                                              | 872                                                                               | 0                                                                                 | 1143                                                                              | 559                                                                               | 0                                                                                  | 0                                                                                   | 0                                                                                   | 409                                                                                 | 0                                                                                   | 450                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                |                                                                                    |                                                                                     |                                                                                     | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 0                                                                                 | 1863                                                                              | 1863                                                                              | 0                                                                                 | 1863                                                                              | 1863                                                                              |                                                                                    |                                                                                     |                                                                                     | 1863                                                                                | 0                                                                                   | 1863                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 2044                                                                              | 636                                                                               | 0                                                                                 | 1191                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 426                                                                                 | 0                                                                                   | 469                                                                                 |
| Adj No. of Lanes             | 0                                                                                 | 3                                                                                 | 1                                                                                 | 0                                                                                 | 3                                                                                 | 1                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 2                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.96                                                                              | 0.96                                                                              | 0.92                                                                              | 0.96                                                                              | 0.96                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.96                                                                                | 0.92                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %         | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 0                                                                                 | 4002                                                                              | 1134                                                                              | 0                                                                                 | 4002                                                                              | 1134                                                                              |                                                                                    |                                                                                     |                                                                                     | 670                                                                                 | 0                                                                                   | 542                                                                                 |
| Arrive On Green              | 0.00                                                                              | 0.72                                                                              | 0.72                                                                              | 0.00                                                                              | 1.00                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.19                                                                                | 0.00                                                                                | 0.19                                                                                |
| Sat Flow, veh/h              | 0                                                                                 | 5588                                                                              | 1583                                                                              | 0                                                                                 | 5588                                                                              | 1583                                                                              |                                                                                    |                                                                                     |                                                                                     | 3442                                                                                | 0                                                                                   | 2787                                                                                |
| Grp Volume(v), veh/h         | 0                                                                                 | 2044                                                                              | 636                                                                               | 0                                                                                 | 1191                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 426                                                                                 | 0                                                                                   | 469                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1863                                                                              | 1583                                                                              | 0                                                                                 | 1863                                                                              | 1583                                                                              |                                                                                    |                                                                                     |                                                                                     | 1721                                                                                | 0                                                                                   | 1393                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 22.9                                                                              | 26.7                                                                              | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 15.9                                                                                | 0.0                                                                                 | 22.8                                                                                |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 22.9                                                                              | 26.7                                                                              | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 15.9                                                                                | 0.0                                                                                 | 22.8                                                                                |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 1.00                                                                              | 0.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 4002                                                                              | 1134                                                                              | 0                                                                                 | 4002                                                                              | 1134                                                                              |                                                                                    |                                                                                     |                                                                                     | 670                                                                                 | 0                                                                                   | 542                                                                                 |
| V/C Ratio(X)                 | 0.00                                                                              | 0.51                                                                              | 0.56                                                                              | 0.00                                                                              | 0.30                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.64                                                                                | 0.00                                                                                | 0.86                                                                                |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 4002                                                                              | 1134                                                                              | 0                                                                                 | 4002                                                                              | 1134                                                                              |                                                                                    |                                                                                     |                                                                                     | 809                                                                                 | 0                                                                                   | 655                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                              | 2.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.00                                                                              | 0.33                                                                              | 0.33                                                                              | 0.00                                                                              | 0.84                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 8.9                                                                               | 9.4                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 51.8                                                                                | 0.0                                                                                 | 54.6                                                                                |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.2                                                                               | 0.7                                                                               | 0.0                                                                               | 0.2                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 1.2                                                                                 | 0.0                                                                                 | 10.1                                                                                |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 11.8                                                                              | 11.7                                                                              | 0.0                                                                               | 0.1                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 7.7                                                                                 | 0.0                                                                                 | 9.6                                                                                 |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 9.0                                                                               | 10.1                                                                              | 0.0                                                                               | 0.2                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 53.0                                                                                | 0.0                                                                                 | 64.7                                                                                |
| LnGrp LOS                    |                                                                                   | A                                                                                 | B                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     | D                                                                                   |                                                                                     | E                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 2680                                                                              |                                                                                   |                                                                                   | 1191                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 895                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                   | 0.2                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 59.1                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 106.7                                                                             |                                                                                   | 33.3                                                                              |                                                                                   | 106.7                                                                             |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 6.4                                                                               |                                                                                   | 6.1                                                                               |                                                                                   | 6.4                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 94.6                                                                              |                                                                                   | 32.9                                                                              |                                                                                   | 94.6                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 28.7                                                                              |                                                                                   | 24.8                                                                              |                                                                                   | 2.0                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 56.3                                                                              |                                                                                   | 2.4                                                                               |                                                                                   | 74.6                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 16.4                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# HCM 2010 Signalized Intersection Summary

## 6: I-15 NB Ramps & Rancho Bernardo Rd

3/24/2016

|                              |  |      |      |      |      |      |      |      |      |     |     |     |
|------------------------------|------------------------------------------------------------------------------------|------|------|------|------|------|------|------|------|-----|-----|-----|
| Movement                     | EBL                                                                                | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL | SBT | SBR |
| Lane Configurations          |                                                                                    | ↑↑↑  | ↑    |      | ↑↑↑  | ↑    | ↑↑   |      | ↑↑   |     |     |     |
| Traffic Volume (veh/h)       | 0                                                                                  | 891  | 1089 | 0    | 1001 | 487  | 701  | 0    | 432  | 0   | 0   | 0   |
| Future Volume (veh/h)        | 0                                                                                  | 891  | 1089 | 0    | 1001 | 487  | 701  | 0    | 432  | 0   | 0   | 0   |
| Number                       | 5                                                                                  | 2    | 12   | 1    | 6    | 16   | 3    | 8    | 18   |     |     |     |
| Initial Q (Qb), veh          | 0                                                                                  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |     |     |     |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                               |      | 1.00 | 1.00 |      | 1.00 | 1.00 |      | 1.00 |     |     |     |
| Parking Bus, Adj             | 1.00                                                                               | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |     |     |     |
| Adj Sat Flow, veh/h/ln       | 0                                                                                  | 1863 | 1863 | 0    | 1863 | 1863 | 1863 | 0    | 1863 |     |     |     |
| Adj Flow Rate, veh/h         | 0                                                                                  | 948  | 0    | 0    | 1065 | 518  | 746  | 0    | 460  |     |     |     |
| Adj No. of Lanes             | 0                                                                                  | 3    | 1    | 0    | 3    | 1    | 2    | 0    | 2    |     |     |     |
| Peak Hour Factor             | 0.92                                                                               | 0.94 | 0.94 | 0.92 | 0.94 | 0.94 | 0.94 | 0.92 | 0.94 |     |     |     |
| Percent Heavy Veh, %         | 0                                                                                  | 2    | 2    | 0    | 2    | 2    | 2    | 0    | 2    |     |     |     |
| Cap, veh/h                   | 0                                                                                  | 3663 | 1038 | 0    | 3333 | 1038 | 879  | 0    | 711  |     |     |     |
| Arrive On Green              | 0.00                                                                               | 1.00 | 0.00 | 0.00 | 0.66 | 0.66 | 0.26 | 0.00 | 0.26 |     |     |     |
| Sat Flow, veh/h              | 0                                                                                  | 5588 | 1583 | 0    | 5253 | 1583 | 3442 | 0    | 2787 |     |     |     |
| Grp Volume(v), veh/h         | 0                                                                                  | 948  | 0    | 0    | 1065 | 518  | 746  | 0    | 460  |     |     |     |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                  | 1863 | 1583 | 0    | 1695 | 1583 | 1721 | 0    | 1393 |     |     |     |
| Q Serve(g_s), s              | 0.0                                                                                | 0.0  | 0.0  | 0.0  | 12.8 | 23.5 | 28.9 | 0.0  | 20.6 |     |     |     |
| Cycle Q Clear(g_c), s        | 0.0                                                                                | 0.0  | 0.0  | 0.0  | 12.8 | 23.5 | 28.9 | 0.0  | 20.6 |     |     |     |
| Prop In Lane                 | 0.00                                                                               |      | 1.00 | 0.00 |      | 1.00 | 1.00 |      | 1.00 |     |     |     |
| Lane Grp Cap(c), veh/h       | 0                                                                                  | 3663 | 1038 | 0    | 3333 | 1038 | 879  | 0    | 711  |     |     |     |
| V/C Ratio(X)                 | 0.00                                                                               | 0.26 | 0.00 | 0.00 | 0.32 | 0.50 | 0.85 | 0.00 | 0.65 |     |     |     |
| Avail Cap(c_a), veh/h        | 0                                                                                  | 3663 | 1038 | 0    | 3333 | 1038 | 1227 | 0    | 993  |     |     |     |
| HCM Platoon Ratio            | 1.00                                                                               | 1.67 | 1.67 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |     |     |     |
| Upstream Filter(I)           | 0.00                                                                               | 0.77 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |     |     |     |
| Uniform Delay (d), s/veh     | 0.0                                                                                | 0.0  | 0.0  | 0.0  | 10.5 | 12.4 | 49.6 | 0.0  | 46.5 |     |     |     |
| Incr Delay (d2), s/veh       | 0.0                                                                                | 0.1  | 0.0  | 0.0  | 0.3  | 1.7  | 4.2  | 0.0  | 1.0  |     |     |     |
| Initial Q Delay(d3),s/veh    | 0.0                                                                                | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |     |     |     |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                                | 0.0  | 0.0  | 0.0  | 6.0  | 10.7 | 14.2 | 0.0  | 8.0  |     |     |     |
| LnGrp Delay(d),s/veh         | 0.0                                                                                | 0.1  | 0.0  | 0.0  | 10.8 | 14.1 | 53.7 | 0.0  | 47.5 |     |     |     |
| LnGrp LOS                    |                                                                                    | A    |      |      | B    | B    | D    |      | D    |     |     |     |
| Approach Vol, veh/h          |                                                                                    | 948  |      |      | 1583 |      |      | 1206 |      |     |     |     |
| Approach Delay, s/veh        |                                                                                    | 0.1  |      |      | 11.8 |      |      | 51.4 |      |     |     |     |
| Approach LOS                 |                                                                                    | A    |      |      | B    |      |      | D    |      |     |     |     |
| Timer                        | 1                                                                                  | 2    | 3    | 4    | 5    | 6    | 7    | 8    |      |     |     |     |
| Assigned Phs                 |                                                                                    | 2    |      |      |      | 6    |      | 8    |      |     |     |     |
| Phs Duration (G+Y+Rc), s     |                                                                                    | 98.2 |      |      |      | 98.2 |      | 41.8 |      |     |     |     |
| Change Period (Y+Rc), s      |                                                                                    | 6.4  |      |      |      | 6.4  |      | 6.1  |      |     |     |     |
| Max Green Setting (Gmax), s  |                                                                                    | 77.6 |      |      |      | 77.6 |      | 49.9 |      |     |     |     |
| Max Q Clear Time (g_c+I1), s |                                                                                    | 2.0  |      |      |      | 25.5 |      | 30.9 |      |     |     |     |
| Green Ext Time (p_c), s      |                                                                                    | 32.6 |      |      |      | 27.9 |      | 4.9  |      |     |     |     |
| <b>Intersection Summary</b>  |                                                                                    |      |      |      |      |      |      |      |      |     |     |     |
| HCM 2010 Ctrl Delay          |                                                                                    |      |      | 21.6 |      |      |      |      |      |     |     |     |
| HCM 2010 LOS                 |                                                                                    |      |      | C    |      |      |      |      |      |     |     |     |
| <b>Notes</b>                 |                                                                                    |      |      |      |      |      |      |      |      |     |     |     |

# HCM 2010 Signalized Intersection Summary

## 7: Bernardo Center Dr & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |                                                                                   |   |   |                                                                                     |  |  |  |
| Traffic Volume (veh/h)       | 251                                                                               | 670                                                                               | 301                                                                               | 123                                                                               | 642                                                                               | 145                                                                               | 434                                                                                | 465                                                                                 | 247                                                                                 | 173                                                                                 | 276                                                                                 | 103                                                                                 |
| Future Volume (veh/h)        | 251                                                                               | 670                                                                               | 301                                                                               | 123                                                                               | 642                                                                               | 145                                                                               | 434                                                                                | 465                                                                                 | 247                                                                                 | 173                                                                                 | 276                                                                                 | 103                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.98                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h         | 264                                                                               | 705                                                                               | 317                                                                               | 129                                                                               | 676                                                                               | 153                                                                               | 457                                                                                | 489                                                                                 | 260                                                                                 | 182                                                                                 | 291                                                                                 | 108                                                                                 |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 | 1                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                  | 2                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                               | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 337                                                                               | 1305                                                                              | 548                                                                               | 194                                                                               | 892                                                                               | 202                                                                               | 535                                                                                | 666                                                                                 | 352                                                                                 | 256                                                                                 | 768                                                                                 | 486                                                                                 |
| Arrive On Green              | 0.10                                                                              | 0.35                                                                              | 0.35                                                                              | 0.06                                                                              | 0.31                                                                              | 0.31                                                                              | 0.16                                                                               | 0.30                                                                                | 0.30                                                                                | 0.07                                                                                | 0.22                                                                                | 0.22                                                                                |
| Sat Flow, veh/h              | 3548                                                                              | 3725                                                                              | 1563                                                                              | 3442                                                                              | 2861                                                                              | 647                                                                               | 3442                                                                               | 2236                                                                                | 1183                                                                                | 3442                                                                                | 3539                                                                                | 1549                                                                                |
| Grp Volume(v), veh/h         | 264                                                                               | 705                                                                               | 317                                                                               | 129                                                                               | 418                                                                               | 411                                                                               | 457                                                                                | 386                                                                                 | 363                                                                                 | 182                                                                                 | 291                                                                                 | 108                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1863                                                                              | 1563                                                                              | 1721                                                                              | 1770                                                                              | 1738                                                                              | 1721                                                                               | 1770                                                                                | 1650                                                                                | 1721                                                                                | 1770                                                                                | 1549                                                                                |
| Q Serve(g_s), s              | 6.9                                                                               | 14.3                                                                              | 15.6                                                                              | 3.5                                                                               | 20.1                                                                              | 20.2                                                                              | 12.2                                                                               | 18.6                                                                                | 18.7                                                                                | 4.9                                                                                 | 6.6                                                                                 | 4.9                                                                                 |
| Cycle Q Clear(g_c), s        | 6.9                                                                               | 14.3                                                                              | 15.6                                                                              | 3.5                                                                               | 20.1                                                                              | 20.2                                                                              | 12.2                                                                               | 18.6                                                                                | 18.7                                                                                | 4.9                                                                                 | 6.6                                                                                 | 4.9                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.37                                                                              | 1.00                                                                               |                                                                                     | 0.72                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 337                                                                               | 1305                                                                              | 548                                                                               | 194                                                                               | 552                                                                               | 542                                                                               | 535                                                                                | 527                                                                                 | 491                                                                                 | 256                                                                                 | 768                                                                                 | 486                                                                                 |
| V/C Ratio(X)                 | 0.78                                                                              | 0.54                                                                              | 0.58                                                                              | 0.66                                                                              | 0.76                                                                              | 0.76                                                                              | 0.85                                                                               | 0.73                                                                                | 0.74                                                                                | 0.71                                                                                | 0.38                                                                                | 0.22                                                                                |
| Avail Cap(c_a), veh/h        | 379                                                                               | 1394                                                                              | 585                                                                               | 251                                                                               | 619                                                                               | 608                                                                               | 611                                                                                | 860                                                                                 | 802                                                                                 | 415                                                                                 | 1496                                                                                | 805                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 41.9                                                                              | 24.6                                                                              | 25.0                                                                              | 43.8                                                                              | 29.3                                                                              | 29.3                                                                              | 38.9                                                                               | 29.8                                                                                | 29.9                                                                                | 42.8                                                                                | 31.6                                                                                | 24.1                                                                                |
| Incr Delay (d2), s/veh       | 9.2                                                                               | 0.4                                                                               | 1.3                                                                               | 4.3                                                                               | 4.8                                                                               | 4.9                                                                               | 10.3                                                                               | 2.0                                                                                 | 2.2                                                                                 | 3.6                                                                                 | 0.3                                                                                 | 0.2                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 3.8                                                                               | 7.4                                                                               | 6.9                                                                               | 1.8                                                                               | 10.6                                                                              | 10.4                                                                              | 6.6                                                                                | 9.3                                                                                 | 8.8                                                                                 | 2.5                                                                                 | 3.3                                                                                 | 2.1                                                                                 |
| LnGrp Delay(d),s/veh         | 51.1                                                                              | 25.0                                                                              | 26.3                                                                              | 48.0                                                                              | 34.1                                                                              | 34.3                                                                              | 49.2                                                                               | 31.8                                                                                | 32.1                                                                                | 46.4                                                                                | 31.9                                                                                | 24.3                                                                                |
| LnGrp LOS                    | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                  | C                                                                                   | C                                                                                   | D                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h          | 1286                                                                              |                                                                                   |                                                                                   |                                                                                   | 958                                                                               |                                                                                   |                                                                                    |                                                                                     | 1206                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 30.7                                                                              |                                                                                   |                                                                                   |                                                                                   | 36.0                                                                              |                                                                                   |                                                                                    |                                                                                     | 38.5                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 9.7                                                                               | 39.3                                                                              | 19.1                                                                              | 26.4                                                                              | 13.4                                                                              | 35.7                                                                              | 11.4                                                                               | 34.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.4                                                                               | 6.2                                                                               | 4.4                                                                               | 5.9                                                                               | 4.4                                                                               | * 6.2                                                                             | 4.4                                                                                | * 5.9                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 6.9                                                                               | 35.4                                                                              | 16.8                                                                              | 40.0                                                                              | 10.1                                                                              | * 33                                                                              | 11.4                                                                               | * 46                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 5.5                                                                               | 17.6                                                                              | 14.2                                                                              | 8.6                                                                               | 8.9                                                                               | 22.2                                                                              | 6.9                                                                                | 20.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 10.3                                                                              | 0.5                                                                               | 7.8                                                                               | 0.1                                                                               | 7.3                                                                               | 0.2                                                                                | 7.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          | 34.9                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 8: West Bernardo Dr & Duenda Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |                                                                                     |  |  |                                                                                     |
| Traffic Volume (veh/h)       | 21                                                                                | 131                                                                               | 134                                                                               | 73                                                                                | 70                                                                                | 63                                                                                | 68                                                                                 | 147                                                                                 | 90                                                                                  | 106                                                                                 | 202                                                                                 | 12                                                                                  |
| Future Volume (veh/h)        | 21                                                                                | 131                                                                               | 134                                                                               | 73                                                                                | 70                                                                                | 63                                                                                | 68                                                                                 | 147                                                                                 | 90                                                                                  | 106                                                                                 | 202                                                                                 | 12                                                                                  |
| Number                       | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                  | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.98                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.98                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 24                                                                                | 147                                                                               | 151                                                                               | 82                                                                                | 79                                                                                | 71                                                                                | 76                                                                                 | 165                                                                                 | 101                                                                                 | 119                                                                                 | 227                                                                                 | 13                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                  | 2                                                                                   | 0                                                                                   | 1                                                                                   | 2                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                               | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 421                                                                               | 198                                                                               | 204                                                                               | 168                                                                               | 177                                                                               | 150                                                                               | 96                                                                                 | 349                                                                                 | 203                                                                                 | 155                                                                                 | 662                                                                                 | 38                                                                                  |
| Arrive On Green              | 0.24                                                                              | 0.24                                                                              | 0.24                                                                              | 0.09                                                                              | 0.09                                                                              | 0.09                                                                              | 0.05                                                                               | 0.16                                                                                | 0.16                                                                                | 0.09                                                                                | 0.19                                                                                | 0.19                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 836                                                                               | 859                                                                               | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                               | 2158                                                                                | 1253                                                                                | 1774                                                                                | 3400                                                                                | 193                                                                                 |
| Grp Volume(v), veh/h         | 24                                                                                | 0                                                                                 | 298                                                                               | 82                                                                                | 79                                                                                | 71                                                                                | 76                                                                                 | 134                                                                                 | 132                                                                                 | 119                                                                                 | 117                                                                                 | 123                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 0                                                                                 | 1694                                                                              | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                               | 1770                                                                                | 1642                                                                                | 1774                                                                                | 1770                                                                                | 1824                                                                                |
| Q Serve(g_s), s              | 0.5                                                                               | 0.0                                                                               | 7.8                                                                               | 2.1                                                                               | 1.9                                                                               | 2.0                                                                               | 2.0                                                                                | 3.3                                                                                 | 3.5                                                                                 | 3.1                                                                                 | 2.7                                                                                 | 2.8                                                                                 |
| Cycle Q Clear(g_c), s        | 0.5                                                                               | 0.0                                                                               | 7.8                                                                               | 2.1                                                                               | 1.9                                                                               | 2.0                                                                               | 2.0                                                                                | 3.3                                                                                 | 3.5                                                                                 | 3.1                                                                                 | 2.7                                                                                 | 2.8                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.51                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.76                                                                                | 1.00                                                                                |                                                                                     | 0.11                                                                                |
| Lane Grp Cap(c), veh/h       | 421                                                                               | 0                                                                                 | 402                                                                               | 168                                                                               | 177                                                                               | 150                                                                               | 96                                                                                 | 286                                                                                 | 265                                                                                 | 155                                                                                 | 345                                                                                 | 355                                                                                 |
| V/C Ratio(X)                 | 0.06                                                                              | 0.00                                                                              | 0.74                                                                              | 0.49                                                                              | 0.45                                                                              | 0.47                                                                              | 0.79                                                                               | 0.47                                                                                | 0.50                                                                                | 0.77                                                                                | 0.34                                                                                | 0.34                                                                                |
| Avail Cap(c_a), veh/h        | 854                                                                               | 0                                                                                 | 816                                                                               | 669                                                                               | 702                                                                               | 597                                                                               | 334                                                                                | 667                                                                                 | 619                                                                                 | 409                                                                                 | 741                                                                                 | 764                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 14.1                                                                              | 0.0                                                                               | 16.9                                                                              | 20.5                                                                              | 20.4                                                                              | 20.5                                                                              | 22.3                                                                               | 18.2                                                                                | 18.3                                                                                | 21.3                                                                                | 16.6                                                                                | 16.6                                                                                |
| Incr Delay (d2), s/veh       | 0.1                                                                               | 0.0                                                                               | 2.7                                                                               | 2.2                                                                               | 1.8                                                                               | 2.3                                                                               | 13.4                                                                               | 1.2                                                                                 | 1.4                                                                                 | 7.7                                                                                 | 0.6                                                                                 | 0.6                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.2                                                                               | 0.0                                                                               | 3.9                                                                               | 1.1                                                                               | 1.1                                                                               | 1.0                                                                               | 1.3                                                                                | 1.7                                                                                 | 1.7                                                                                 | 1.9                                                                                 | 1.4                                                                                 | 1.5                                                                                 |
| LnGrp Delay(d),s/veh         | 14.1                                                                              | 0.0                                                                               | 19.6                                                                              | 22.7                                                                              | 22.2                                                                              | 22.8                                                                              | 35.7                                                                               | 19.3                                                                                | 19.7                                                                                | 29.1                                                                                | 17.2                                                                                | 17.2                                                                                |
| LnGrp LOS                    | B                                                                                 |                                                                                   | B                                                                                 | C                                                                                 | C                                                                                 | C                                                                                 | D                                                                                  | B                                                                                   | B                                                                                   | C                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 322                                                                               |                                                                                   |                                                                                   | 232                                                                               |                                                                                   |                                                                                    | 342                                                                                 |                                                                                     |                                                                                     | 359                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 19.2                                                                              |                                                                                   |                                                                                   | 22.5                                                                              |                                                                                   |                                                                                    | 23.1                                                                                |                                                                                     |                                                                                     | 21.1                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 9.2                                                                               | 12.7                                                                              |                                                                                   | 16.3                                                                              | 7.6                                                                               | 14.3                                                                              |                                                                                    | 9.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |                                                                                    | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 11.0                                                                              | 18.0                                                                              |                                                                                   | 23.0                                                                              | 9.0                                                                               | 20.0                                                                              |                                                                                    | 18.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 5.1                                                                               | 5.5                                                                               |                                                                                   | 9.8                                                                               | 4.0                                                                               | 4.8                                                                               |                                                                                    | 4.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 2.2                                                                               |                                                                                   | 1.6                                                                               | 0.1                                                                               | 2.4                                                                               |                                                                                    | 0.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 21.4                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 9: West Bernardo Dr & Via Del Campo

3/24/2016

|                              |  |  |  |  |  |  |   |   |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|---|
| Movement                     | EBL                                                                               | EBT                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                               |   |   |
| Lane Configurations          |  |  |  |                                                                                   |  |  |   |   |
| Traffic Volume (veh/h)       | 47                                                                                | 402                                                                               | 438                                                                               | 38                                                                                | 148                                                                               | 356                                                                               |   |   |
| Future Volume (veh/h)        | 47                                                                                | 402                                                                               | 438                                                                               | 38                                                                                | 148                                                                               | 356                                                                               |   |   |
| Number                       | 5                                                                                 | 2                                                                                 | 6                                                                                 | 16                                                                                | 7                                                                                 | 14                                                                                |   |   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |   |   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              |   |   |
| Adj Flow Rate, veh/h         | 55                                                                                | 467                                                                               | 509                                                                               | 44                                                                                | 172                                                                               | 414                                                                               |   |   |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 |   |   |
| Peak Hour Factor             | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              |   |   |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |   |
| Cap, veh/h                   | 70                                                                                | 2036                                                                              | 1582                                                                              | 136                                                                               | 525                                                                               | 469                                                                               |   |   |
| Arrive On Green              | 0.04                                                                              | 0.58                                                                              | 0.48                                                                              | 0.48                                                                              | 0.30                                                                              | 0.30                                                                              |   |   |
| Sat Flow, veh/h              | 1774                                                                              | 3632                                                                              | 3391                                                                              | 284                                                                               | 1774                                                                              | 1583                                                                              |   |   |
| Grp Volume(v), veh/h         | 55                                                                                | 467                                                                               | 272                                                                               | 281                                                                               | 172                                                                               | 414                                                                               |   |   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1770                                                                              | 1813                                                                              | 1774                                                                              | 1583                                                                              |   |   |
| Q Serve(g_s), s              | 2.4                                                                               | 5.1                                                                               | 7.5                                                                               | 7.5                                                                               | 6.0                                                                               | 19.7                                                                              |   |   |
| Cycle Q Clear(g_c), s        | 2.4                                                                               | 5.1                                                                               | 7.5                                                                               | 7.5                                                                               | 6.0                                                                               | 19.7                                                                              |   |   |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   | 0.16                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Lane Grp Cap(c), veh/h       | 70                                                                                | 2036                                                                              | 849                                                                               | 870                                                                               | 525                                                                               | 469                                                                               |   |   |
| V/C Ratio(X)                 | 0.78                                                                              | 0.23                                                                              | 0.32                                                                              | 0.32                                                                              | 0.33                                                                              | 0.88                                                                              |   |   |
| Avail Cap(c_a), veh/h        | 260                                                                               | 2036                                                                              | 849                                                                               | 870                                                                               | 769                                                                               | 686                                                                               |   |   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Uniform Delay (d), s/veh     | 37.6                                                                              | 8.2                                                                               | 12.7                                                                              | 12.7                                                                              | 21.7                                                                              | 26.6                                                                              |   |   |
| Incr Delay (d2), s/veh       | 16.9                                                                              | 0.3                                                                               | 1.0                                                                               | 1.0                                                                               | 0.4                                                                               | 9.3                                                                               |   |   |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |   |
| %ile BackOfQ(50%),veh/ln     | 1.5                                                                               | 2.5                                                                               | 3.9                                                                               | 4.0                                                                               | 3.0                                                                               | 16.7                                                                              |   |   |
| LnGrp Delay(d),s/veh         | 54.5                                                                              | 8.5                                                                               | 13.6                                                                              | 13.6                                                                              | 22.1                                                                              | 35.9                                                                              |   |   |
| LnGrp LOS                    | D                                                                                 | A                                                                                 | B                                                                                 | B                                                                                 | C                                                                                 | D                                                                                 |   |   |
| Approach Vol, veh/h          |                                                                                   | 522                                                                               | 553                                                                               |                                                                                   | 586                                                                               |                                                                                   |   |   |
| Approach Delay, s/veh        |                                                                                   | 13.3                                                                              | 13.6                                                                              |                                                                                   | 31.8                                                                              |                                                                                   |   |   |
| Approach LOS                 |                                                                                   | B                                                                                 | B                                                                                 |                                                                                   | C                                                                                 |                                                                                   |   |   |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8 |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |   |   |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 51.0                                                                              |                                                                                   | 28.1                                                                              | 7.5                                                                               | 43.5                                                                              |   |   |
| Change Period (Y+Rc), s      |                                                                                   | 5.5                                                                               |                                                                                   | * 4.7                                                                             | 4.4                                                                               | 5.5                                                                               |   |   |
| Max Green Setting (Gmax), s  |                                                                                   | 45.5                                                                              |                                                                                   | * 34                                                                              | 11.6                                                                              | 29.5                                                                              |   |   |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 7.1                                                                               |                                                                                   | 21.7                                                                              | 4.4                                                                               | 9.5                                                                               |   |   |
| Green Ext Time (p_c), s      |                                                                                   | 7.2                                                                               |                                                                                   | 1.7                                                                               | 0.0                                                                               | 6.1                                                                               |   |   |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 20.0                                                                              |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |   |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |

# HCM 2010 Signalized Intersection Summary

## 10: Bernardo Center Dr & West Bernardo Dr

3/24/2016

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|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|
| Movement                     | EBL                                                                               | EBT                                                                               | WBU                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                                 |      |
| Lane Configurations          |  |  |  |  |  |  |  |      |
| Traffic Volume (veh/h)       | 420                                                                               | 385                                                                               | 0                                                                                 | 369                                                                               | 360                                                                               | 340                                                                               | 480                                                                                 |      |
| Future Volume (veh/h)        | 420                                                                               | 385                                                                               | 0                                                                                 | 369                                                                               | 360                                                                               | 340                                                                               | 480                                                                                 |      |
| Number                       | 1                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 12                                                                                | 3                                                                                 | 18                                                                                  |      |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   |      |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              |                                                                                   | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                                |      |
| Adj Flow Rate, veh/h         | 447                                                                               | 410                                                                               |                                                                                   | 393                                                                               | 383                                                                               | 362                                                                               | 511                                                                                 |      |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                   |      |
| Peak Hour Factor             | 0.94                                                                              | 0.94                                                                              |                                                                                   | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                                |      |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   |      |
| Cap, veh/h                   | 589                                                                               | 1934                                                                              |                                                                                   | 584                                                                               | 1748                                                                              | 557                                                                               | 769                                                                                 |      |
| Arrive On Green              | 0.17                                                                              | 0.55                                                                              |                                                                                   | 0.31                                                                              | 0.31                                                                              | 0.31                                                                              | 0.31                                                                                |      |
| Sat Flow, veh/h              | 3442                                                                              | 3632                                                                              |                                                                                   | 1863                                                                              | 2782                                                                              | 1774                                                                              | 1583                                                                                |      |
| Grp Volume(v), veh/h         | 447                                                                               | 410                                                                               |                                                                                   | 393                                                                               | 383                                                                               | 362                                                                               | 511                                                                                 |      |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1770                                                                              |                                                                                   | 1863                                                                              | 1391                                                                              | 1774                                                                              | 1583                                                                                |      |
| Q Serve(g_s), s              | 8.8                                                                               | 4.2                                                                               |                                                                                   | 13.1                                                                              | 4.2                                                                               | 12.5                                                                              | 17.4                                                                                |      |
| Cycle Q Clear(g_c), s        | 8.8                                                                               | 4.2                                                                               |                                                                                   | 13.1                                                                              | 4.2                                                                               | 12.5                                                                              | 17.4                                                                                |      |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Lane Grp Cap(c), veh/h       | 589                                                                               | 1934                                                                              |                                                                                   | 584                                                                               | 1748                                                                              | 557                                                                               | 769                                                                                 |      |
| V/C Ratio(X)                 | 0.76                                                                              | 0.21                                                                              |                                                                                   | 0.67                                                                              | 0.22                                                                              | 0.65                                                                              | 0.66                                                                                |      |
| Avail Cap(c_a), veh/h        | 1239                                                                              | 3221                                                                              |                                                                                   | 1113                                                                              | 2539                                                                              | 938                                                                               | 1108                                                                                |      |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Uniform Delay (d), s/veh     | 28.1                                                                              | 8.3                                                                               |                                                                                   | 21.2                                                                              | 5.7                                                                               | 21.0                                                                              | 13.9                                                                                |      |
| Incr Delay (d2), s/veh       | 2.0                                                                               | 0.1                                                                               |                                                                                   | 1.4                                                                               | 0.1                                                                               | 1.3                                                                               | 1.0                                                                                 |      |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 |      |
| %ile BackOfQ(50%),veh/ln     | 4.3                                                                               | 2.1                                                                               |                                                                                   | 6.9                                                                               | 1.6                                                                               | 6.3                                                                               | 7.7                                                                                 |      |
| LnGrp Delay(d),s/veh         | 30.1                                                                              | 8.3                                                                               |                                                                                   | 22.6                                                                              | 5.8                                                                               | 22.3                                                                              | 14.9                                                                                |      |
| LnGrp LOS                    | C                                                                                 | A                                                                                 |                                                                                   | C                                                                                 | A                                                                                 | C                                                                                 | B                                                                                   |      |
| Approach Vol, veh/h          |                                                                                   | 857                                                                               |                                                                                   | 776                                                                               |                                                                                   | 873                                                                               |                                                                                     |      |
| Approach Delay, s/veh        |                                                                                   | 19.7                                                                              |                                                                                   | 14.3                                                                              |                                                                                   | 18.0                                                                              |                                                                                     |      |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   | B                                                                                 |                                                                                   | B                                                                                 |                                                                                     |      |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8    |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                     | 8    |
| Phs Duration (G+Y+Rc), s     | 16.6                                                                              | 27.8                                                                              |                                                                                   |                                                                                   |                                                                                   | 44.4                                                                              |                                                                                     | 26.7 |
| Change Period (Y+Rc), s      | 4.4                                                                               | 5.5                                                                               |                                                                                   |                                                                                   |                                                                                   | * 5.5                                                                             |                                                                                     | 4.4  |
| Max Green Setting (Gmax), s  | 25.6                                                                              | 42.5                                                                              |                                                                                   |                                                                                   |                                                                                   | * 65                                                                              |                                                                                     | 37.6 |
| Max Q Clear Time (g_c+I1), s | 10.8                                                                              | 15.1                                                                              |                                                                                   |                                                                                   |                                                                                   | 6.2                                                                               |                                                                                     | 19.4 |
| Green Ext Time (p_c), s      | 1.4                                                                               | 7.2                                                                               |                                                                                   |                                                                                   |                                                                                   | 7.9                                                                               |                                                                                     | 2.9  |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 17.4                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |

## **APPENDIX G**

### **RANCHO BERNARDO AND BLACK MOUNTAIN RANCH PUBLIC FACILITIES FINANCING PLANS EXCERPTS**

# CITY OF SAN DIEGO FACILITIES FINANCING PROGRAM

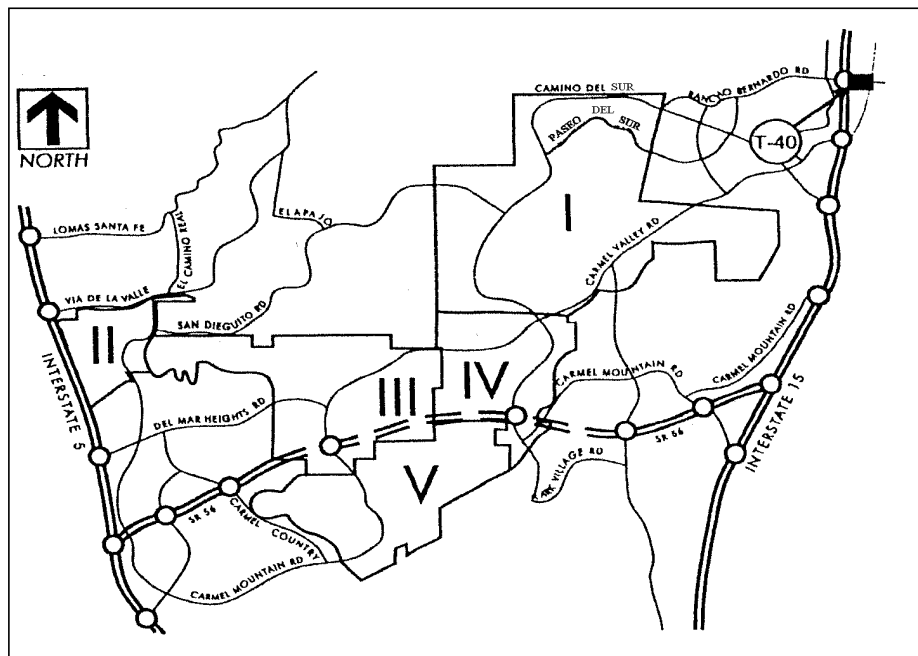
**TITLE: RANCHO BERNARDO RD WIDENING (I-15 TO BERNARDO CENTER DR)- ADD 2 LNS**

DEPARTMENT: TRANSPORTATION & STORM WATER  
CIP or JO #: N/A

**PROJECT: T-40**  
COUNCIL DISTRICT: 5  
COMMUNITY PLAN: BMR

| SOURCE       | FUNDING:           | EXPEN/ENCUM | CONT APPROP | FY 2015 | FY 2016   | FY 2017   | FY 2018 | FY 2019 |
|--------------|--------------------|-------------|-------------|---------|-----------|-----------|---------|---------|
| FBA-BMR      | \$1,055,000        |             |             |         | \$309,000 | \$746,000 |         |         |
| FBA-PHR      |                    |             |             |         |           |           |         |         |
| FBA-TH       |                    |             |             |         |           |           |         |         |
| FBA-DMM      |                    |             |             |         |           |           |         |         |
| COUNTY       |                    |             |             |         |           |           |         |         |
| STATE        |                    |             |             |         |           |           |         |         |
| DEV/SUBD     |                    |             |             |         |           |           |         |         |
| PRIVATE      |                    |             |             |         |           |           |         |         |
| MTDB         |                    |             |             |         |           |           |         |         |
| OTHER        |                    |             |             |         |           |           |         |         |
| UNIDENT      |                    |             |             |         |           |           |         |         |
| <b>TOTAL</b> | <b>\$1,055,000</b> | \$0         | \$0         | \$0     | \$309,000 | \$746,000 | \$0     | \$0     |

| SOURCE       | FY 2020 | FY 2021 | FY 2022 | FY 2023 | FY 2024 | FY 2025 | FY 2026 | FY 2027 |
|--------------|---------|---------|---------|---------|---------|---------|---------|---------|
| FBA-BMR      |         |         |         |         |         |         |         |         |
| FBA-PHR      |         |         |         |         |         |         |         |         |
| FBA-TH       |         |         |         |         |         |         |         |         |
| FBA-DMM      |         |         |         |         |         |         |         |         |
| COUNTY       |         |         |         |         |         |         |         |         |
| STATE        |         |         |         |         |         |         |         |         |
| DEV/SUBD     |         |         |         |         |         |         |         |         |
| PRIVATE      |         |         |         |         |         |         |         |         |
| MTDB         |         |         |         |         |         |         |         |         |
| OTHER        |         |         |         |         |         |         |         |         |
| UNIDENT      |         |         |         |         |         |         |         |         |
| <b>TOTAL</b> | \$0     | \$0     | \$0     | \$0     | \$0     | \$0     | \$0     | \$0     |





**CITY OF SAN DIEGO  
FACILITIES FINANCING PROGRAM**

**TITLE: RANCHO BERNARDO RD WIDENING (I-15 TO BERNARDO CENTER DR)- ADD 2 LNS**

|              |                              |                   |             |
|--------------|------------------------------|-------------------|-------------|
| DEPARTMENT:  | TRANSPORTATION & STORM WATER | <b>PROJECT:</b>   | <b>T-40</b> |
| CIP or JO #: | N/A                          | COUNCIL DISTRICT: | 5           |
|              |                              | COMMUNITY PLAN:   | BMR         |

**DESCRIPTION:**

DESIGN AND CONSTRUCT THE ADDITION OF TWO LANES TO THE EXISTING FOUR-LANES PORTION OF RANCHO BERNARDO ROAD BETWEEN THE I-15 NORTHBOUND RAMPS AND BERNARDO CENTER DRIVE TO ATTAIN THE SIX-LANE MAJOR CROSS SECTION IDENTIFIED IN THE ADOPTED SUBAREA PLAN.

**JUSTIFICATION:**

THIS FACILITY IMPLEMENTS THE BLACK MOUNTAIN RANCH SUBAREA PLAN AND IS NEEDED TO SERVE THE COMMUNITY.

**FUNDING:**

A DEVELOPER (BMR LLC) WILL ADVANCE THE FUNDING AND CONSTRUCT THIS PROJECT UNDER THE TERMS OF A REIMBURSEMENT AGREEMENT, AND WILL BE REIMBURSED FROM THE BLACK MOUNTAIN RANCH FACILITIES BENEFIT ASSESSMENT (FBA) AS FUNDING BECOMES AVAILABLE.

**NOTES:**

**SCHEDULE:**

DESIGN IS UNDERWAY AND CONSTRUCTION IS ANTICIPATED IN FY 2016/2017.

# CITY OF SAN DIEGO

## FACILITIES FINANCING PROGRAM

### RANCHO BERNARDO ROAD WIDENING (I-15 EAST TO BERNARDO CENTER DRIVE - ADD TWO LANES)

TITLE:

DEPARTMENT: TRANSPORTATION & STORM WATER

PROJECT: T-6

COUNCIL DISTRICT: 5

CIP NO.:

COMMUNITY PLAN: RANCHO BERNARDO

**DESCRIPTION:**

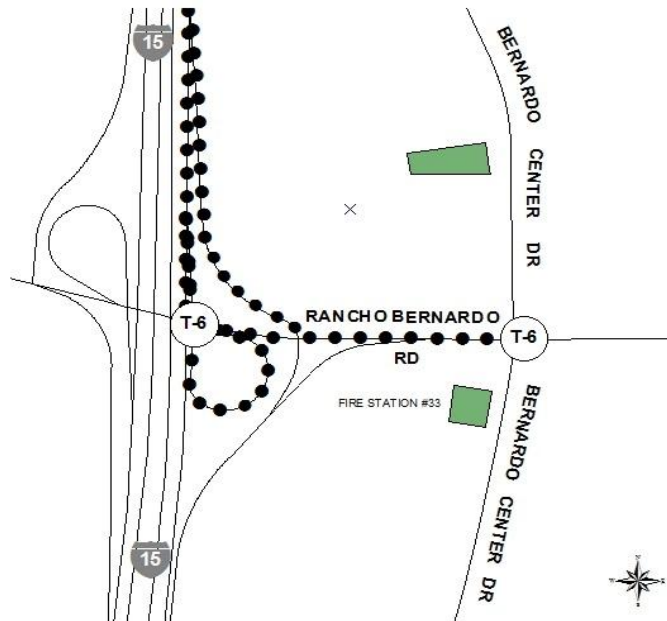
THIS PROJECT WILL DESIGN AND CONSTRUCT THE ADDITION OF TWO LANES TO THE EXISTING FOUR-LANE PORTION OF RANCHO BERNARDO ROAD BETWEEN THE I-15 NORTHBOUND RAMPS AND BERNARDO CENTER DRIVE TO ATTAIN THE SIX LANE MAJOR CROSS SECTION IDENTIFIED IN THE ADOPTED COMMUNITY PLAN.

**JUSTIFICATION:**

THIS PROJECT IS CONSISTENT WITH THE RANCHO BERNARDO COMMUNITY PLAN AND GENERAL PLAN GUIDELINES AND IS NEEDED TO SERVE THE COMMUNITY AT FULL BUILDOUT.

**SCHEDULE:**

CONSTRUCTION IS ANTICIPATED IN FY 2014 PER THE FY 2013 BMR PFFP (PROJECT NO. T-40).\*



| FUNDING:           | SOURCE       | EXPEN/ENCUM | CONT APPR | FY 2014 | FY 2015 | FY 2016 | FY 2017 | FY 2018 | FY 2019 |
|--------------------|--------------|-------------|-----------|---------|---------|---------|---------|---------|---------|
| \$ 1,327,008       | BMR*         |             |           |         |         |         |         |         |         |
| <b>\$1,327,008</b> | <b>TOTAL</b> | \$0         | \$0       | \$0     | \$0     | \$0     | \$0     | \$0     | \$0     |

\*BLACK MOUNTAIN RANCH PFFP PROJECT T-40

# CITY OF SAN DIEGO FACILITIES FINANCING PROGRAM

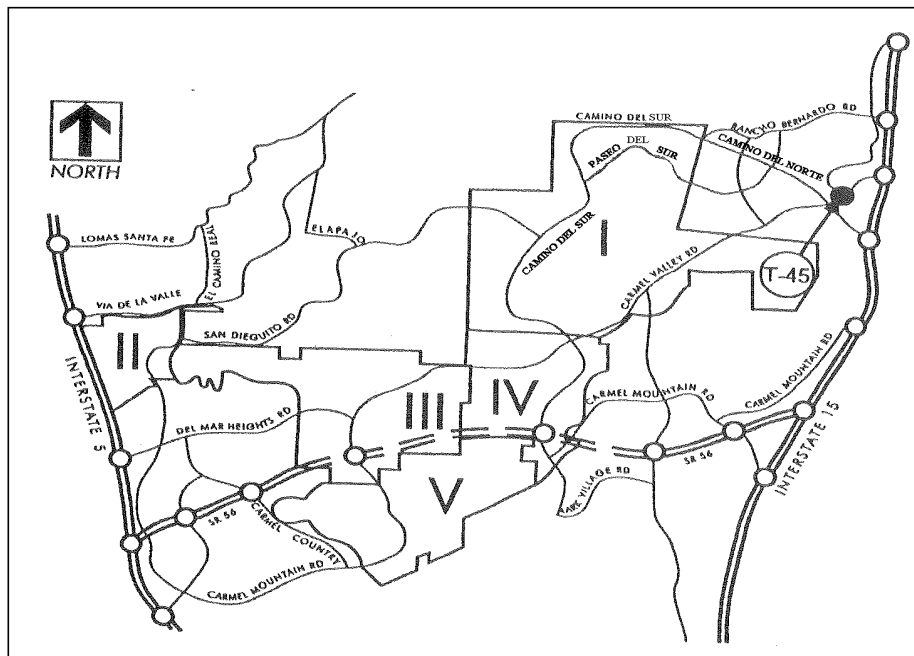
**TITLE: WEST BERNARDO DR AT BERNARDO CENTER DR INTERSECTION IMPROVEMENTS**

DEPARTMENT: TRANSPORTATION & STORM WATER  
CIP or JO #: N/A

**PROJECT: T-45**  
COUNCIL DISTRICT: 5  
COMMUNITY PLAN: BMR

| SOURCE       | FUNDING:         | EXPEN/ENCUM | CONT APPROP | FY 2015    | FY 2016          | FY 2017    | FY 2018    | FY 2019    |
|--------------|------------------|-------------|-------------|------------|------------------|------------|------------|------------|
| FBA-BMR      | \$565,000        |             |             |            | \$565,000        |            |            |            |
| FBA-PHR      |                  |             |             |            |                  |            |            |            |
| FBA-TH       |                  |             |             |            |                  |            |            |            |
| FBA-DMM      |                  |             |             |            |                  |            |            |            |
| COUNTY       |                  |             |             |            |                  |            |            |            |
| STATE        |                  |             |             |            |                  |            |            |            |
| DEV/SUBD     |                  |             |             |            |                  |            |            |            |
| PRIVATE      |                  |             |             |            |                  |            |            |            |
| MTDB         |                  |             |             |            |                  |            |            |            |
| OTHER        |                  |             |             |            |                  |            |            |            |
| UNIDENT      |                  |             |             |            |                  |            |            |            |
| <b>TOTAL</b> | <b>\$565,000</b> | <b>\$0</b>  | <b>\$0</b>  | <b>\$0</b> | <b>\$565,000</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> |

| SOURCE       | FY 2020    | FY 2021    | FY 2022    | FY 2023    | FY 2024    | FY 2025    | FY 2026    | FY 2027    |
|--------------|------------|------------|------------|------------|------------|------------|------------|------------|
| FBA-BMR      |            |            |            |            |            |            |            |            |
| FBA-PHR      |            |            |            |            |            |            |            |            |
| FBA-TH       |            |            |            |            |            |            |            |            |
| FBA-DMM      |            |            |            |            |            |            |            |            |
| COUNTY       |            |            |            |            |            |            |            |            |
| STATE        |            |            |            |            |            |            |            |            |
| DEV/SUBD     |            |            |            |            |            |            |            |            |
| PRIVATE      |            |            |            |            |            |            |            |            |
| MTDB         |            |            |            |            |            |            |            |            |
| OTHER        |            |            |            |            |            |            |            |            |
| UNIDENT      |            |            |            |            |            |            |            |            |
| <b>TOTAL</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> |



**CITY OF SAN DIEGO  
FACILITIES FINANCING PROGRAM**

**TITLE: WEST BERNARDO DR AT BERNARDO CENTER DR INTERSECTION IMPROVEMENTS**

DEPARTMENT: TRANSPORTATION & STORM WATER  
CIP or JO #: N/A

**PROJECT: T-45**  
COUNCIL DISTRICT: 5  
COMMUNITY PLAN: BMR

**DESCRIPTION:**

DESIGN AND CONSTRUCT INTERSECTION IMPROVEMENTS TO PROVIDE ADDITIONAL RIGHT TURNS FROM BERNARDO CENTER DRIVE TO WEST BERNARDO DRIVE, INCLUDING A MINOR WIDENING.

**JUSTIFICATION:**

THIS FACILITY IMPLEMENTS THE BLACK MOUNTAIN RANCH SUBAREA PLAN AND IS NEEDED TO SERVE THE COMMUNITY.

**FUNDING:**

A DEVELOPER (BMR LLC) WILL ADVANCE THE FUNDING AND CONSTRUCT THIS PROJECT UNDER THE TERMS OF A REIMBURSEMENT AGREEMENT, AND WILL BE REIMBURSED FROM THE BLACK MOUNTAIN RANCH FACILITIES BENEFIT ASSESSMENT (FBA) AS FUNDING BECOMES AVAILABLE.

**NOTES:**

**SCHEDULE:**

PROJECT HAS BEEN DESIGNED AND PERMITTED. CONSTRUCTION ANTICIPATED IN FY 2016.

## **APPENDIX H**

### **PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS YEAR 2035 WITHOUT PROJECT**

HCM 2010 Signalized Intersection Summary  
1: Camino San Bernardo & Rancho Bernardo Rd

Year 2035 AM

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 30                                                                                | 990                                                                               | 190                                                                               | 480                                                                               | 780                                                                               | 80                                                                                | 40                                                                                 | 10                                                                                  | 190                                                                                 | 20                                                                                  | 10                                                                                  | 10                                                                                  |
| Future Volume (veh/h)        | 30                                                                                | 990                                                                               | 190                                                                               | 480                                                                               | 780                                                                               | 80                                                                                | 40                                                                                 | 10                                                                                  | 190                                                                                 | 20                                                                                  | 10                                                                                  | 10                                                                                  |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.98                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.98                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 33                                                                                | 1076                                                                              | 207                                                                               | 522                                                                               | 848                                                                               | 87                                                                                | 43                                                                                 | 11                                                                                  | 207                                                                                 | 22                                                                                  | 11                                                                                  | 11                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                  | 2                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 58                                                                                | 1324                                                                              | 254                                                                               | 623                                                                               | 1933                                                                              | 198                                                                               | 294                                                                                | 310                                                                                 | 273                                                                                 | 102                                                                                 | 50                                                                                  | 28                                                                                  |
| Arrive On Green              | 0.03                                                                              | 0.45                                                                              | 0.45                                                                              | 0.18                                                                              | 0.60                                                                              | 0.60                                                                              | 0.18                                                                               | 0.18                                                                                | 0.18                                                                                | 0.18                                                                                | 0.18                                                                                | 0.18                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 2955                                                                              | 566                                                                               | 3442                                                                              | 3241                                                                              | 333                                                                               | 1384                                                                               | 1770                                                                                | 1558                                                                                | 192                                                                                 | 287                                                                                 | 160                                                                                 |
| Grp Volume(v), veh/h         | 33                                                                                | 643                                                                               | 640                                                                               | 522                                                                               | 463                                                                               | 472                                                                               | 43                                                                                 | 11                                                                                  | 207                                                                                 | 44                                                                                  | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1752                                                                              | 1721                                                                              | 1770                                                                              | 1804                                                                              | 1384                                                                               | 1770                                                                                | 1558                                                                                | 640                                                                                 | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 1.5                                                                               | 24.9                                                                              | 25.2                                                                              | 11.6                                                                              | 11.3                                                                              | 11.3                                                                              | 0.0                                                                                | 0.4                                                                                 | 10.0                                                                                | 0.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 1.5                                                                               | 24.9                                                                              | 25.2                                                                              | 11.6                                                                              | 11.3                                                                              | 11.3                                                                              | 2.7                                                                                | 0.4                                                                                 | 10.0                                                                                | 10.3                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.32                                                                              | 1.00                                                                              |                                                                                   | 0.18                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 0.50                                                                                |                                                                                     | 0.25                                                                                |
| Lane Grp Cap(c), veh/h       | 58                                                                                | 793                                                                               | 785                                                                               | 623                                                                               | 1056                                                                              | 1076                                                                              | 294                                                                                | 310                                                                                 | 273                                                                                 | 180                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.57                                                                              | 0.81                                                                              | 0.82                                                                              | 0.84                                                                              | 0.44                                                                              | 0.44                                                                              | 0.15                                                                               | 0.04                                                                                | 0.76                                                                                | 0.24                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 137                                                                               | 849                                                                               | 841                                                                               | 760                                                                               | 1104                                                                              | 1125                                                                              | 558                                                                                | 648                                                                                 | 570                                                                                 | 444                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 37.8                                                                              | 19.0                                                                              | 19.0                                                                              | 31.3                                                                              | 8.7                                                                               | 8.7                                                                               | 28.1                                                                               | 27.1                                                                                | 31.1                                                                                | 28.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 8.6                                                                               | 5.6                                                                               | 5.9                                                                               | 6.9                                                                               | 0.3                                                                               | 0.3                                                                               | 0.2                                                                                | 0.0                                                                                 | 4.3                                                                                 | 0.7                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.9                                                                               | 13.4                                                                              | 13.4                                                                              | 6.1                                                                               | 5.5                                                                               | 5.6                                                                               | 0.8                                                                                | 0.2                                                                                 | 4.6                                                                                 | 0.9                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 46.3                                                                              | 24.6                                                                              | 25.0                                                                              | 38.2                                                                              | 9.0                                                                               | 9.0                                                                               | 28.3                                                                               | 27.2                                                                                | 35.4                                                                                | 28.7                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | A                                                                                 | A                                                                                 | C                                                                                  | C                                                                                   | D                                                                                   | C                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          | 1316                                                                              |                                                                                   |                                                                                   |                                                                                   | 1457                                                                              |                                                                                   |                                                                                    |                                                                                     | 261                                                                                 |                                                                                     | 44                                                                                  |                                                                                     |
| Approach Delay, s/veh        | 25.3                                                                              |                                                                                   |                                                                                   |                                                                                   | 19.5                                                                              |                                                                                   |                                                                                    |                                                                                     | 33.9                                                                                |                                                                                     | 28.7                                                                                |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    |                                                                                     | C                                                                                   |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 18.8                                                                              | 41.5                                                                              |                                                                                   |                                                                                   | 18.9                                                                              | 7.1                                                                               | 53.2                                                                               | 18.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 6.0                                                                               |                                                                                   |                                                                                   | 5.0                                                                               | 4.5                                                                               | 6.0                                                                                | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 17.5                                                                              | 38.0                                                                              |                                                                                   |                                                                                   | 29.0                                                                              | 6.1                                                                               | 49.4                                                                               | 29.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 13.6                                                                              | 27.2                                                                              |                                                                                   |                                                                                   | 12.3                                                                              | 3.5                                                                               | 13.3                                                                               | 12.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.8                                                                               | 8.3                                                                               |                                                                                   |                                                                                   | 1.4                                                                               | 0.0                                                                               | 19.0                                                                               | 1.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 23.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 2: Via Del Campo & Rancho Bernardo Rd

Year 2035 AM  
3/24/2016

|                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                              |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 10                                                                                | 1010                                                                              | 390                                                                               | 700                                                                               | 1330                                                                              | 10                                                                                | 80                                                                                 | 10                                                                                  | 25                                                                                  | 10                                                                                  | 10                                                                                  | 10                                                                                  |
| Future Volume (veh/h)        | 10                                                                                | 1010                                                                              | 390                                                                               | 700                                                                               | 1330                                                                              | 10                                                                                | 80                                                                                 | 10                                                                                  | 25                                                                                  | 10                                                                                  | 10                                                                                  | 10                                                                                  |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.98                                                                              | 1.00                                                                              |                                                                                   | 0.98                                                                              | 1.00                                                                               |                                                                                     | 0.99                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1900                                                                               | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 11                                                                                | 1098                                                                              | 424                                                                               | 761                                                                               | 1446                                                                              | 11                                                                                | 87                                                                                 | 11                                                                                  | 27                                                                                  | 11                                                                                  | 11                                                                                  | 11                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 0                                                                                  | 1                                                                                   | 1                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 18                                                                                | 1009                                                                              | 381                                                                               | 612                                                                               | 2660                                                                              | 20                                                                                | 155                                                                                | 17                                                                                  | 220                                                                                 | 45                                                                                  | 44                                                                                  | 27                                                                                  |
| Arrive On Green              | 0.01                                                                              | 0.40                                                                              | 0.40                                                                              | 0.34                                                                              | 0.74                                                                              | 0.74                                                                              | 0.14                                                                               | 0.14                                                                                | 0.14                                                                                | 0.14                                                                                | 0.14                                                                                | 0.14                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 2498                                                                              | 942                                                                               | 1774                                                                              | 3599                                                                              | 27                                                                                | 760                                                                                | 120                                                                                 | 1562                                                                                | 77                                                                                  | 309                                                                                 | 193                                                                                 |
| Grp Volume(v), veh/h         | 11                                                                                | 770                                                                               | 752                                                                               | 761                                                                               | 711                                                                               | 746                                                                               | 98                                                                                 | 0                                                                                   | 27                                                                                  | 33                                                                                  | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1671                                                                              | 1774                                                                              | 1770                                                                              | 1857                                                                              | 880                                                                                | 0                                                                                   | 1562                                                                                | 579                                                                                 | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.9                                                                               | 56.9                                                                              | 56.9                                                                              | 48.6                                                                              | 24.7                                                                              | 24.7                                                                              | 0.0                                                                                | 0.0                                                                                 | 2.1                                                                                 | 0.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.9                                                                               | 56.9                                                                              | 56.9                                                                              | 48.6                                                                              | 24.7                                                                              | 24.7                                                                              | 17.0                                                                               | 0.0                                                                                 | 2.1                                                                                 | 17.2                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.56                                                                              | 1.00                                                                              |                                                                                   | 0.01                                                                              | 0.89                                                                               |                                                                                     | 1.00                                                                                | 0.33                                                                                |                                                                                     | 0.33                                                                                |
| Lane Grp Cap(c), veh/h       | 18                                                                                | 715                                                                               | 675                                                                               | 612                                                                               | 1308                                                                              | 1372                                                                              | 172                                                                                | 0                                                                                   | 220                                                                                 | 116                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.62                                                                              | 1.08                                                                              | 1.11                                                                              | 1.24                                                                              | 0.54                                                                              | 0.54                                                                              | 0.57                                                                               | 0.00                                                                                | 0.12                                                                                | 0.29                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 50                                                                                | 715                                                                               | 675                                                                               | 612                                                                               | 1308                                                                              | 1372                                                                              | 265                                                                                | 0                                                                                   | 322                                                                                 | 221                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 69.5                                                                              | 42.0                                                                              | 42.0                                                                              | 46.1                                                                              | 8.0                                                                               | 8.0                                                                               | 59.1                                                                               | 0.0                                                                                 | 52.9                                                                                | 53.6                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 31.0                                                                              | 56.5                                                                              | 70.4                                                                              | 122.9                                                                             | 0.5                                                                               | 0.4                                                                               | 2.9                                                                                | 0.0                                                                                 | 0.2                                                                                 | 1.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.6                                                                               | 38.8                                                                              | 39.2                                                                              | 44.5                                                                              | 12.0                                                                              | 12.6                                                                              | 3.9                                                                                | 0.0                                                                                 | 0.9                                                                                 | 1.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 100.5                                                                             | 98.5                                                                              | 112.4                                                                             | 169.1                                                                             | 8.5                                                                               | 8.5                                                                               | 62.0                                                                               | 0.0                                                                                 | 53.1                                                                                | 54.9                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | F                                                                                 | F                                                                                 | F                                                                                 | F                                                                                 | A                                                                                 | A                                                                                 | E                                                                                  |                                                                                     | D                                                                                   | D                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          | 1533                                                                              |                                                                                   |                                                                                   | 2218                                                                              |                                                                                   |                                                                                   | 125                                                                                |                                                                                     |                                                                                     | 33                                                                                  |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 105.3                                                                             |                                                                                   |                                                                                   | 63.6                                                                              |                                                                                   |                                                                                   | 60.1                                                                               |                                                                                     |                                                                                     | 54.9                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | F                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | E                                                                                  |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 4                                                                                 |                                                                                   | 5                                                                                 | 6                                                                                 | 8                                                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 53.0                                                                              | 62.8                                                                              | 25.1                                                                              |                                                                                   | 5.8                                                                               | 110.0                                                                             | 25.1                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.4                                                                               | 5.9                                                                               | * 5.2                                                                             |                                                                                   | 4.4                                                                               | * 5.9                                                                             | 5.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 48.6                                                                              | 56.9                                                                              | * 29                                                                              |                                                                                   | 4.0                                                                               | * 1E2                                                                             | 29.0                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 50.6                                                                              | 58.9                                                                              | 19.2                                                                              |                                                                                   | 2.9                                                                               | 26.7                                                                              | 19.0                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.0                                                                               | 0.5                                                                               |                                                                                   | 0.0                                                                               | 45.5                                                                              | 0.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          | 79.8                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 | E                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# HCM 2010 Signalized Intersection Summary

## 3: Project Dwy/Matinal Rd & Rancho Bernardo Rd

Year 2035 AM  
3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 40                                                                                | 920                                                                               | 0                                                                                 | 0                                                                                 | 1770                                                                              | 20                                                                                | 0                                                                                  | 0                                                                                   | 0                                                                                   | 90                                                                                  | 0                                                                                   | 150                                                                                 |
| Future Volume (veh/h)        | 40                                                                                | 920                                                                               | 0                                                                                 | 0                                                                                 | 1770                                                                              | 20                                                                                | 0                                                                                  | 0                                                                                   | 0                                                                                   | 90                                                                                  | 0                                                                                   | 150                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.98                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 43                                                                                | 1000                                                                              | 0                                                                                 | 0                                                                                 | 1924                                                                              | 22                                                                                | 0                                                                                  | 0                                                                                   | 0                                                                                   | 98                                                                                  | 0                                                                                   | 163                                                                                 |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                  | 1                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 54                                                                                | 1200                                                                              | 0                                                                                 | 447                                                                               | 2135                                                                              | 24                                                                                | 84                                                                                 | 378                                                                                 | 0                                                                                   | 159                                                                                 | 15                                                                                  | 192                                                                                 |
| Arrive On Green              | 0.03                                                                              | 0.34                                                                              | 0.00                                                                              | 0.00                                                                              | 0.60                                                                              | 0.60                                                                              | 0.00                                                                               | 0.00                                                                                | 0.00                                                                                | 0.20                                                                                | 0.00                                                                                | 0.20                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 3632                                                                              | 0                                                                                 | 1774                                                                              | 3584                                                                              | 41                                                                                | 1218                                                                               | 1863                                                                                | 0                                                                                   | 498                                                                                 | 73                                                                                  | 949                                                                                 |
| Grp Volume(v), veh/h         | 43                                                                                | 1000                                                                              | 0                                                                                 | 0                                                                                 | 948                                                                               | 998                                                                               | 0                                                                                  | 0                                                                                   | 0                                                                                   | 261                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 0                                                                                 | 1774                                                                              | 1770                                                                              | 1856                                                                              | 1218                                                                               | 1863                                                                                | 0                                                                                   | 1519                                                                                | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 2.1                                                                               | 22.2                                                                              | 0.0                                                                               | 0.0                                                                               | 39.8                                                                              | 40.1                                                                              | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 12.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 2.1                                                                               | 22.2                                                                              | 0.0                                                                               | 0.0                                                                               | 39.8                                                                              | 40.1                                                                              | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 14.1                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                              |                                                                                   | 0.02                                                                              | 1.00                                                                               |                                                                                     | 0.00                                                                                | 0.38                                                                                |                                                                                     | 0.62                                                                                |
| Lane Grp Cap(c), veh/h       | 54                                                                                | 1200                                                                              | 0                                                                                 | 447                                                                               | 1054                                                                              | 1105                                                                              | 84                                                                                 | 378                                                                                 | 0                                                                                   | 366                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.80                                                                              | 0.83                                                                              | 0.00                                                                              | 0.00                                                                              | 0.90                                                                              | 0.90                                                                              | 0.00                                                                               | 0.00                                                                                | 0.00                                                                                | 0.71                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 83                                                                                | 1470                                                                              | 0                                                                                 | 447                                                                               | 1109                                                                              | 1162                                                                              | 246                                                                                | 625                                                                                 | 0                                                                                   | 555                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                               | 0.00                                                                                | 0.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 41.1                                                                              | 26.0                                                                              | 0.0                                                                               | 0.0                                                                               | 15.0                                                                              | 15.1                                                                              | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 32.6                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 25.0                                                                              | 3.6                                                                               | 0.0                                                                               | 0.0                                                                               | 9.7                                                                               | 9.7                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 2.6                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 1.4                                                                               | 11.4                                                                              | 0.0                                                                               | 0.0                                                                               | 22.1                                                                              | 23.2                                                                              | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 6.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 66.1                                                                              | 29.5                                                                              | 0.0                                                                               | 0.0                                                                               | 24.7                                                                              | 24.7                                                                              | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 35.2                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | E                                                                                 | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 | C                                                                                 |                                                                                    |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1043                                                                              |                                                                                   |                                                                                   | 1946                                                                              |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 261                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 31.0                                                                              |                                                                                   |                                                                                   | 24.7                                                                              |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 35.2                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 27.5                                                                              | 35.9                                                                              |                                                                                   | 21.9                                                                              | 6.6                                                                               | 56.8                                                                              |                                                                                    | 21.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 6.0                                                                               | * 7                                                                               |                                                                                   | 4.6                                                                               | 4.0                                                                               | 6.0                                                                               |                                                                                    | * 4.6                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 21.0                                                                              | * 35                                                                              |                                                                                   | 28.0                                                                              | 4.0                                                                               | 53.4                                                                              |                                                                                    | * 29                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 0.0                                                                               | 24.2                                                                              |                                                                                   | 16.1                                                                              | 4.1                                                                               | 42.1                                                                              |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 4.7                                                                               |                                                                                   | 1.3                                                                               | 0.0                                                                               | 8.7                                                                               |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 27.6                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 4: West Bernardo Dr & Rancho Bernardo Rd

Year 2035 AM

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 60                                                                                | 730                                                                               | 100                                                                               | 610                                                                               | 1650                                                                              | 300                                                                               | 140                                                                                | 90                                                                                  | 180                                                                                 | 680                                                                                 | 370                                                                                 | 170                                                                                 |
| Future Volume (veh/h)        | 60                                                                                | 730                                                                               | 100                                                                               | 610                                                                               | 1650                                                                              | 300                                                                               | 140                                                                                | 90                                                                                  | 180                                                                                 | 680                                                                                 | 370                                                                                 | 170                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                               |                                                                                     | 0.99                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                               | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 62                                                                                | 753                                                                               | 103                                                                               | 629                                                                               | 1701                                                                              | 309                                                                               | 144                                                                                | 93                                                                                  | 186                                                                                 | 701                                                                                 | 381                                                                                 | 175                                                                                 |
| Adj No. of Lanes             | 2                                                                                 | 3                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 | 1                                                                                 | 2                                                                                  | 2                                                                                   | 1                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                               | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 104                                                                               | 962                                                                               | 131                                                                               | 891                                                                               | 1607                                                                              | 709                                                                               | 215                                                                                | 403                                                                                 | 588                                                                                 | 784                                                                                 | 661                                                                                 | 299                                                                                 |
| Arrive On Green              | 0.03                                                                              | 0.21                                                                              | 0.21                                                                              | 0.26                                                                              | 0.45                                                                              | 0.45                                                                              | 0.06                                                                               | 0.11                                                                                | 0.11                                                                                | 0.23                                                                                | 0.28                                                                                | 0.28                                                                                |
| Sat Flow, veh/h              | 3442                                                                              | 4529                                                                              | 615                                                                               | 3442                                                                              | 3539                                                                              | 1562                                                                              | 3442                                                                               | 3539                                                                                | 1561                                                                                | 3442                                                                                | 2366                                                                                | 1071                                                                                |
| Grp Volume(v), veh/h         | 62                                                                                | 562                                                                               | 294                                                                               | 629                                                                               | 1701                                                                              | 309                                                                               | 144                                                                                | 93                                                                                  | 186                                                                                 | 701                                                                                 | 284                                                                                 | 272                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1695                                                                              | 1754                                                                              | 1721                                                                              | 1770                                                                              | 1562                                                                              | 1721                                                                               | 1770                                                                                | 1561                                                                                | 1721                                                                                | 1770                                                                                | 1668                                                                                |
| Q Serve(g_s), s              | 2.0                                                                               | 17.9                                                                              | 18.1                                                                              | 18.9                                                                              | 51.9                                                                              | 15.4                                                                              | 4.7                                                                                | 2.7                                                                                 | 4.1                                                                                 | 22.6                                                                                | 15.7                                                                                | 16.1                                                                                |
| Cycle Q Clear(g_c), s        | 2.0                                                                               | 17.9                                                                              | 18.1                                                                              | 18.9                                                                              | 51.9                                                                              | 15.4                                                                              | 4.7                                                                                | 2.7                                                                                 | 4.1                                                                                 | 22.6                                                                                | 15.7                                                                                | 16.1                                                                                |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.35                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.64                                                                                |
| Lane Grp Cap(c), veh/h       | 104                                                                               | 720                                                                               | 372                                                                               | 891                                                                               | 1607                                                                              | 709                                                                               | 215                                                                                | 403                                                                                 | 588                                                                                 | 784                                                                                 | 494                                                                                 | 466                                                                                 |
| V/C Ratio(X)                 | 0.59                                                                              | 0.78                                                                              | 0.79                                                                              | 0.71                                                                              | 1.06                                                                              | 0.44                                                                              | 0.67                                                                               | 0.23                                                                                | 0.32                                                                                | 0.89                                                                                | 0.57                                                                                | 0.59                                                                                |
| Avail Cap(c_a), veh/h        | 120                                                                               | 913                                                                               | 473                                                                               | 891                                                                               | 1607                                                                              | 709                                                                               | 1027                                                                               | 1210                                                                                | 944                                                                                 | 906                                                                                 | 543                                                                                 | 512                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 54.7                                                                              | 42.5                                                                              | 42.6                                                                              | 38.4                                                                              | 31.2                                                                              | 21.2                                                                              | 52.4                                                                               | 46.1                                                                                | 9.1                                                                                 | 42.8                                                                                | 35.4                                                                                | 35.5                                                                                |
| Incr Delay (d2), s/veh       | 5.8                                                                               | 3.4                                                                               | 6.9                                                                               | 2.6                                                                               | 39.8                                                                              | 0.4                                                                               | 3.6                                                                                | 0.3                                                                                 | 0.3                                                                                 | 10.3                                                                                | 1.2                                                                                 | 1.4                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 1.0                                                                               | 8.7                                                                               | 9.5                                                                               | 9.3                                                                               | 34.1                                                                              | 6.7                                                                               | 2.3                                                                                | 1.4                                                                                 | 2.1                                                                                 | 11.8                                                                                | 7.9                                                                                 | 7.6                                                                                 |
| LnGrp Delay(d),s/veh         | 60.6                                                                              | 45.9                                                                              | 49.5                                                                              | 41.0                                                                              | 71.0                                                                              | 21.7                                                                              | 56.0                                                                               | 46.4                                                                                | 9.4                                                                                 | 53.1                                                                                | 36.6                                                                                | 36.9                                                                                |
| LnGrp LOS                    | E                                                                                 | D                                                                                 | D                                                                                 | D                                                                                 | F                                                                                 | C                                                                                 | E                                                                                  | D                                                                                   | A                                                                                   | D                                                                                   | D                                                                                   | D                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 918                                                                               |                                                                                   |                                                                                   | 2639                                                                              |                                                                                   |                                                                                    | 423                                                                                 |                                                                                     |                                                                                     | 1257                                                                                |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 48.1                                                                              |                                                                                   |                                                                                   | 58.1                                                                              |                                                                                   |                                                                                    | 33.4                                                                                |                                                                                     |                                                                                     | 45.9                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 35.3                                                                              | 30.2                                                                              | 11.5                                                                              | 37.3                                                                              | 7.9                                                                               | 57.6                                                                              | 30.4                                                                               | 18.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.7                                                                               | * 5.9                                                                             | 4.4                                                                               | 5.4                                                                               | 4.4                                                                               | 5.7                                                                               | 4.4                                                                                | 5.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 24.9                                                                              | * 31                                                                              | 34.1                                                                              | 35.1                                                                              | 4.0                                                                               | 51.9                                                                              | 30.1                                                                               | 39.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 20.9                                                                              | 20.1                                                                              | 6.7                                                                               | 18.1                                                                              | 4.0                                                                               | 53.9                                                                              | 24.6                                                                               | 6.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 3.7                                                                               | 4.2                                                                               | 0.5                                                                               | 4.5                                                                               | 0.0                                                                               | 0.0                                                                               | 1.4                                                                                | 5.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 51.4                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

HCM 2010 Signalized Intersection Summary  
5: I-15 SB Ramps & Rancho Bernardo Rd

Year 2035 AM  
3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |                                                                                   |  |  |                                                                                    |                                                                                     |                                                                                     |  |                                                                                     |  |
| Traffic Volume (veh/h)       | 0                                                                                 | 860                                                                               | 700                                                                               | 0                                                                                 | 1370                                                                              | 560                                                                               | 0                                                                                  | 0                                                                                   | 0                                                                                   | 760                                                                                 | 0                                                                                   | 1170                                                                                |
| Future Volume (veh/h)        | 0                                                                                 | 860                                                                               | 700                                                                               | 0                                                                                 | 1370                                                                              | 560                                                                               | 0                                                                                  | 0                                                                                   | 0                                                                                   | 760                                                                                 | 0                                                                                   | 1170                                                                                |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                |                                                                                    |                                                                                     |                                                                                     | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 0                                                                                 | 1863                                                                              | 1863                                                                              | 0                                                                                 | 1863                                                                              | 1863                                                                              |                                                                                    |                                                                                     |                                                                                     | 1863                                                                                | 0                                                                                   | 1863                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 905                                                                               | 737                                                                               | 0                                                                                 | 1442                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 800                                                                                 | 0                                                                                   | 1232                                                                                |
| Adj No. of Lanes             | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 3                                                                                 | 1                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 2                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.95                                                                              | 0.95                                                                              | 0.92                                                                              | 0.95                                                                              | 0.95                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.95                                                                                | 0.92                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %         | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 0                                                                                 | 1499                                                                              | 1274                                                                              | 0                                                                                 | 2249                                                                              | 637                                                                               |                                                                                    |                                                                                     |                                                                                     | 1627                                                                                | 0                                                                                   | 1317                                                                                |
| Arrive On Green              | 0.00                                                                              | 0.40                                                                              | 0.40                                                                              | 0.00                                                                              | 0.80                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.47                                                                                | 0.00                                                                                | 0.47                                                                                |
| Sat Flow, veh/h              | 0                                                                                 | 3725                                                                              | 3167                                                                              | 0                                                                                 | 5588                                                                              | 1583                                                                              |                                                                                    |                                                                                     |                                                                                     | 3442                                                                                | 0                                                                                   | 2787                                                                                |
| Grp Volume(v), veh/h         | 0                                                                                 | 905                                                                               | 737                                                                               | 0                                                                                 | 1442                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 800                                                                                 | 0                                                                                   | 1232                                                                                |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1863                                                                              | 1583                                                                              | 0                                                                                 | 1863                                                                              | 1583                                                                              |                                                                                    |                                                                                     |                                                                                     | 1721                                                                                | 0                                                                                   | 1393                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 19.2                                                                              | 18.1                                                                              | 0.0                                                                               | 10.4                                                                              | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 16.0                                                                                | 0.0                                                                                 | 41.8                                                                                |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 19.2                                                                              | 18.1                                                                              | 0.0                                                                               | 10.4                                                                              | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 16.0                                                                                | 0.0                                                                                 | 41.8                                                                                |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 1.00                                                                              | 0.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 1499                                                                              | 1274                                                                              | 0                                                                                 | 2249                                                                              | 637                                                                               |                                                                                    |                                                                                     |                                                                                     | 1627                                                                                | 0                                                                                   | 1317                                                                                |
| V/C Ratio(X)                 | 0.00                                                                              | 0.60                                                                              | 0.58                                                                              | 0.00                                                                              | 0.64                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.49                                                                                | 0.00                                                                                | 0.94                                                                                |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 1499                                                                              | 1274                                                                              | 0                                                                                 | 2249                                                                              | 637                                                                               |                                                                                    |                                                                                     |                                                                                     | 1669                                                                                | 0                                                                                   | 1352                                                                                |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                              | 2.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.00                                                                              | 0.60                                                                              | 0.60                                                                              | 0.00                                                                              | 0.81                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 23.6                                                                              | 23.3                                                                              | 0.0                                                                               | 6.8                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 18.1                                                                                | 0.0                                                                                 | 24.9                                                                                |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 1.1                                                                               | 1.2                                                                               | 0.0                                                                               | 1.2                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.2                                                                                 | 0.0                                                                                 | 12.1                                                                                |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 10.0                                                                              | 8.1                                                                               | 0.0                                                                               | 5.3                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 7.6                                                                                 | 0.0                                                                                 | 18.1                                                                                |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 24.7                                                                              | 24.4                                                                              | 0.0                                                                               | 8.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 18.4                                                                                | 0.0                                                                                 | 37.0                                                                                |
| LnGrp LOS                    |                                                                                   | C                                                                                 | C                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     | B                                                                                   |                                                                                     | D                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 1642                                                                              |                                                                                   |                                                                                   | 1442                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 2032                                                                                |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 24.6                                                                              |                                                                                   |                                                                                   | 8.0                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 29.7                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 46.6                                                                              |                                                                                   | 53.4                                                                              |                                                                                   | 46.6                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 6.4                                                                               |                                                                                   | 6.1                                                                               |                                                                                   | 6.4                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 39.0                                                                              |                                                                                   | 48.5                                                                              |                                                                                   | 39.0                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 21.2                                                                              |                                                                                   | 43.8                                                                              |                                                                                   | 12.4                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 15.5                                                                              |                                                                                   | 3.5                                                                               |                                                                                   | 21.8                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 21.9                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

HCM 2010 Signalized Intersection Summary  
6: I-15 NB Ramps & Rancho Bernardo Rd

Year 2035 AM  
3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |                                                                                   |  |  |  |                                                                                     |  |                                                                                     |                                                                                     |                                                                                     |
| Traffic Volume (veh/h)       | 0                                                                                 | 950                                                                               | 670                                                                               | 0                                                                                 | 1200                                                                              | 320                                                                               | 730                                                                                | 0                                                                                   | 510                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 0                                                                                 | 950                                                                               | 670                                                                               | 0                                                                                 | 1200                                                                              | 320                                                                               | 730                                                                                | 0                                                                                   | 510                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 0                                                                                 | 1863                                                                              | 1863                                                                              | 0                                                                                 | 1863                                                                              | 1863                                                                              | 1863                                                                               | 0                                                                                   | 1863                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Adj Flow Rate, veh/h         | 0                                                                                 | 1011                                                                              | 0                                                                                 | 0                                                                                 | 1277                                                                              | 340                                                                               | 777                                                                                | 0                                                                                   | 543                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Adj No. of Lanes             | 0                                                                                 | 3                                                                                 | 1                                                                                 | 0                                                                                 | 3                                                                                 | 1                                                                                 | 2                                                                                  | 0                                                                                   | 2                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Peak Hour Factor             | 0.92                                                                              | 0.94                                                                              | 0.94                                                                              | 0.92                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                               | 0.92                                                                                | 0.94                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Percent Heavy Veh, %         | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 0                                                                                   | 2                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Cap, veh/h                   | 0                                                                                 | 3320                                                                              | 941                                                                               | 0                                                                                 | 3021                                                                              | 941                                                                               | 967                                                                                | 0                                                                                   | 783                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Arrive On Green              | 0.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 0.59                                                                              | 0.59                                                                              | 0.28                                                                               | 0.00                                                                                | 0.28                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Sat Flow, veh/h              | 0                                                                                 | 5588                                                                              | 1583                                                                              | 0                                                                                 | 5253                                                                              | 1583                                                                              | 3442                                                                               | 0                                                                                   | 2787                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Grp Volume(v), veh/h         | 0                                                                                 | 1011                                                                              | 0                                                                                 | 0                                                                                 | 1277                                                                              | 340                                                                               | 777                                                                                | 0                                                                                   | 543                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1863                                                                              | 1583                                                                              | 0                                                                                 | 1695                                                                              | 1583                                                                              | 1721                                                                               | 0                                                                                   | 1393                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Q Serve(g_s), s              | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 13.6                                                                              | 11.1                                                                              | 21.0                                                                               | 0.0                                                                                 | 17.4                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 13.6                                                                              | 11.1                                                                              | 21.0                                                                               | 0.0                                                                                 | 17.4                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 1.00                                                                              | 0.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 3320                                                                              | 941                                                                               | 0                                                                                 | 3021                                                                              | 941                                                                               | 967                                                                                | 0                                                                                   | 783                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| V/C Ratio(X)                 | 0.00                                                                              | 0.30                                                                              | 0.00                                                                              | 0.00                                                                              | 0.42                                                                              | 0.36                                                                              | 0.80                                                                               | 0.00                                                                                | 0.69                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 3320                                                                              | 941                                                                               | 0                                                                                 | 3021                                                                              | 941                                                                               | 1339                                                                               | 0                                                                                   | 1084                                                                                |                                                                                     |                                                                                     |                                                                                     |
| HCM Platoon Ratio            | 1.00                                                                              | 2.00                                                                              | 2.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Upstream Filter(I)           | 0.00                                                                              | 0.76                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 11.0                                                                              | 10.5                                                                              | 33.4                                                                               | 0.0                                                                                 | 32.1                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.2                                                                               | 0.0                                                                               | 0.0                                                                               | 0.4                                                                               | 1.1                                                                               | 2.5                                                                                | 0.0                                                                                 | 1.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 0.1                                                                               | 0.0                                                                               | 0.0                                                                               | 6.4                                                                               | 5.1                                                                               | 10.3                                                                               | 0.0                                                                                 | 6.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 0.2                                                                               | 0.0                                                                               | 0.0                                                                               | 11.4                                                                              | 11.6                                                                              | 35.9                                                                               | 0.0                                                                                 | 33.2                                                                                |                                                                                     |                                                                                     |                                                                                     |
| LnGrp LOS                    |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 | B                                                                                 | D                                                                                  |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1011                                                                              |                                                                                   |                                                                                   | 1617                                                                              |                                                                                   |                                                                                    | 1320                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 0.2                                                                               |                                                                                   |                                                                                   | 11.5                                                                              |                                                                                   |                                                                                    | 34.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 65.8                                                                              |                                                                                   |                                                                                   |                                                                                   | 65.8                                                                              |                                                                                    | 34.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 6.4                                                                               |                                                                                   |                                                                                   |                                                                                   | 6.4                                                                               |                                                                                    | 6.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 48.6                                                                              |                                                                                   |                                                                                   |                                                                                   | 48.6                                                                              |                                                                                    | 38.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 2.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 15.6                                                                              |                                                                                    | 23.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 28.8                                                                              |                                                                                   |                                                                                   |                                                                                   | 23.0                                                                              |                                                                                    | 5.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 16.4                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

HCM 2010 Signalized Intersection Summary  
7: Bernardo Center Dr & Rancho Bernardo Rd

Year 2035 AM

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|--|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |  |  |  |  |
| Lane Configurations          |  |  |  |  |  |                                                                                   |  |  |                                                                                     |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 360                                                                               | 650                                                                               | 350                                                                               | 180                                                                               | 870                                                                               | 100                                                                               | 270                                                                                 | 200                                                                                 | 120                                                                                 | 230                                                                                 | 310                                                                                 | 130                                                                                 |  |  |  |  |
| Future Volume (veh/h)        | 360                                                                               | 650                                                                               | 350                                                                               | 180                                                                               | 870                                                                               | 100                                                                               | 270                                                                                 | 200                                                                                 | 120                                                                                 | 230                                                                                 | 310                                                                                 | 130                                                                                 |  |  |  |  |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                   | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |  |  |  |  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |  |  |  |  |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.98                                                                              | 1.00                                                                                |                                                                                     | 0.99                                                                                | 1.00                                                                                |                                                                                     | 0.99                                                                                |  |  |  |  |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |  |  |  |  |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |  |  |  |  |
| Adj Flow Rate, veh/h         | 387                                                                               | 726                                                                               | 358                                                                               | 194                                                                               | 935                                                                               | 108                                                                               | 290                                                                                 | 215                                                                                 | 129                                                                                 | 247                                                                                 | 333                                                                                 | 140                                                                                 |  |  |  |  |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 | 1                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                   | 2                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   | 1                                                                                   |  |  |  |  |
| Peak Hour Factor             | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |  |  |  |  |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |  |  |  |  |
| Cap, veh/h                   | 466                                                                               | 1544                                                                              | 656                                                                               | 267                                                                               | 1151                                                                              | 133                                                                               | 362                                                                                 | 402                                                                                 | 231                                                                                 | 329                                                                                 | 626                                                                                 | 484                                                                                 |  |  |  |  |
| Arrive On Green              | 0.13                                                                              | 0.41                                                                              | 0.41                                                                              | 0.08                                                                              | 0.36                                                                              | 0.36                                                                              | 0.11                                                                                | 0.19                                                                                | 0.19                                                                                | 0.10                                                                                | 0.18                                                                                | 0.18                                                                                |  |  |  |  |
| Sat Flow, veh/h              | 3548                                                                              | 3725                                                                              | 1583                                                                              | 3442                                                                              | 3192                                                                              | 369                                                                               | 3442                                                                                | 2160                                                                                | 1241                                                                                | 3442                                                                                | 3539                                                                                | 1560                                                                                |  |  |  |  |
| Grp Volume(v), veh/h         | 387                                                                               | 726                                                                               | 358                                                                               | 194                                                                               | 518                                                                               | 525                                                                               | 290                                                                                 | 174                                                                                 | 170                                                                                 | 247                                                                                 | 333                                                                                 | 140                                                                                 |  |  |  |  |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1721                                                                              | 1770                                                                              | 1791                                                                              | 1721                                                                                | 1770                                                                                | 1632                                                                                | 1721                                                                                | 1770                                                                                | 1560                                                                                |  |  |  |  |
| Q Serve(g_s), s              | 9.8                                                                               | 13.1                                                                              | 15.8                                                                              | 5.1                                                                               | 24.5                                                                              | 24.5                                                                              | 7.6                                                                                 | 8.2                                                                                 | 8.7                                                                                 | 6.5                                                                                 | 7.9                                                                                 | 6.3                                                                                 |  |  |  |  |
| Cycle Q Clear(g_c), s        | 9.8                                                                               | 13.1                                                                              | 15.8                                                                              | 5.1                                                                               | 24.5                                                                              | 24.5                                                                              | 7.6                                                                                 | 8.2                                                                                 | 8.7                                                                                 | 6.5                                                                                 | 7.9                                                                                 | 6.3                                                                                 |  |  |  |  |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.21                                                                              | 1.00                                                                                |                                                                                     | 0.76                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |  |  |  |  |
| Lane Grp Cap(c), veh/h       | 466                                                                               | 1544                                                                              | 656                                                                               | 267                                                                               | 638                                                                               | 646                                                                               | 362                                                                                 | 330                                                                                 | 304                                                                                 | 329                                                                                 | 626                                                                                 | 484                                                                                 |  |  |  |  |
| V/C Ratio(X)                 | 0.83                                                                              | 0.47                                                                              | 0.55                                                                              | 0.73                                                                              | 0.81                                                                              | 0.81                                                                              | 0.80                                                                                | 0.53                                                                                | 0.56                                                                                | 0.75                                                                                | 0.53                                                                                | 0.29                                                                                |  |  |  |  |
| Avail Cap(c_a), veh/h        | 537                                                                               | 1575                                                                              | 669                                                                               | 350                                                                               | 677                                                                               | 686                                                                               | 394                                                                                 | 706                                                                                 | 651                                                                                 | 532                                                                                 | 1531                                                                                | 883                                                                                 |  |  |  |  |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |  |  |  |  |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |  |  |  |  |
| Uniform Delay (d), s/veh     | 39.2                                                                              | 19.7                                                                              | 20.5                                                                              | 41.7                                                                              | 26.7                                                                              | 26.7                                                                              | 40.4                                                                                | 34.0                                                                                | 34.2                                                                                | 40.7                                                                                | 34.6                                                                                | 24.3                                                                                |  |  |  |  |
| Incr Delay (d2), s/veh       | 9.4                                                                               | 0.2                                                                               | 0.9                                                                               | 5.2                                                                               | 7.1                                                                               | 7.0                                                                               | 10.5                                                                                | 1.3                                                                                 | 1.6                                                                                 | 3.4                                                                                 | 0.7                                                                                 | 0.3                                                                                 |  |  |  |  |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |  |  |  |  |
| %ile BackOfQ(50%),veh/ln     | 5.4                                                                               | 6.8                                                                               | 7.0                                                                               | 2.6                                                                               | 13.2                                                                              | 13.4                                                                              | 4.2                                                                                 | 4.1                                                                                 | 4.0                                                                                 | 3.2                                                                                 | 3.9                                                                                 | 2.8                                                                                 |  |  |  |  |
| LnGrp Delay(d),s/veh         | 48.6                                                                              | 19.9                                                                              | 21.4                                                                              | 46.9                                                                              | 33.8                                                                              | 33.8                                                                              | 51.0                                                                                | 35.3                                                                                | 35.8                                                                                | 44.2                                                                                | 35.3                                                                                | 24.6                                                                                |  |  |  |  |
| LnGrp LOS                    | D                                                                                 | B                                                                                 | C                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                   | D                                                                                   | D                                                                                   | D                                                                                   | D                                                                                   | C                                                                                   |  |  |  |  |
| Approach Vol, veh/h          | 1471                                                                              |                                                                                   |                                                                                   |                                                                                   | 1237                                                                              |                                                                                   |                                                                                     |                                                                                     | 634                                                                                 |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Approach Delay, s/veh        | 27.8                                                                              |                                                                                   |                                                                                   |                                                                                   | 35.9                                                                              |                                                                                   |                                                                                     |                                                                                     | 42.6                                                                                |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Phs Duration (G+Y+Rc), s     | 11.6                                                                              | 44.5                                                                              | 14.1                                                                              | 22.3                                                                              | 16.6                                                                              | 39.6                                                                              | 13.2                                                                                | 23.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Change Period (Y+Rc), s      | 4.4                                                                               | 6.2                                                                               | 4.4                                                                               | 5.9                                                                               | 4.4                                                                               | * 6.2                                                                             | 4.4                                                                                 | * 5.9                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Max Green Setting (Gmax), s  | 9.4                                                                               | 39.1                                                                              | 10.6                                                                              | 40.0                                                                              | 14.0                                                                              | * 35                                                                              | 14.3                                                                                | * 37                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Max Q Clear Time (g_c+I1), s | 7.1                                                                               | 17.8                                                                              | 9.6                                                                               | 9.9                                                                               | 11.8                                                                              | 26.5                                                                              | 8.5                                                                                 | 10.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Green Ext Time (p_c), s      | 0.1                                                                               | 13.2                                                                              | 0.1                                                                               | 4.8                                                                               | 0.3                                                                               | 6.9                                                                               | 0.4                                                                                 | 4.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| HCM 2010 Ctrl Delay          | 34.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| HCM 2010 LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |

# HCM 2010 Signalized Intersection Summary

## 8: West Bernardo Dr & Duenda Rd

Year 2035 AM  
3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |                                                                                     |  |  |  |
| Traffic Volume (veh/h)       | 30                                                                                | 180                                                                               | 160                                                                               | 120                                                                               | 50                                                                                | 60                                                                                | 40                                                                                 | 140                                                                                 | 90                                                                                  | 120                                                                                 | 250                                                                                 | 20                                                                                  |
| Future Volume (veh/h)        | 30                                                                                | 180                                                                               | 160                                                                               | 120                                                                               | 50                                                                                | 60                                                                                | 40                                                                                 | 140                                                                                 | 90                                                                                  | 120                                                                                 | 250                                                                                 | 20                                                                                  |
| Number                       | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                  | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 33                                                                                | 196                                                                               | 174                                                                               | 130                                                                               | 54                                                                                | 65                                                                                | 43                                                                                 | 152                                                                                 | 98                                                                                  | 130                                                                                 | 272                                                                                 | 22                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                  | 2                                                                                   | 0                                                                                   | 1                                                                                   | 2                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 482                                                                               | 246                                                                               | 218                                                                               | 205                                                                               | 215                                                                               | 183                                                                               | 62                                                                                 | 318                                                                                 | 194                                                                                 | 169                                                                                 | 698                                                                                 | 56                                                                                  |
| Arrive On Green              | 0.27                                                                              | 0.27                                                                              | 0.27                                                                              | 0.12                                                                              | 0.12                                                                              | 0.12                                                                              | 0.04                                                                               | 0.15                                                                                | 0.15                                                                                | 0.10                                                                                | 0.21                                                                                | 0.21                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 904                                                                               | 803                                                                               | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                               | 2117                                                                                | 1288                                                                                | 1774                                                                                | 3319                                                                                | 267                                                                                 |
| Grp Volume(v), veh/h         | 33                                                                                | 0                                                                                 | 370                                                                               | 130                                                                               | 54                                                                                | 65                                                                                | 43                                                                                 | 126                                                                                 | 124                                                                                 | 130                                                                                 | 144                                                                                 | 150                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 0                                                                                 | 1707                                                                              | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                               | 1770                                                                                | 1635                                                                                | 1774                                                                                | 1770                                                                                | 1816                                                                                |
| Q Serve(g_s), s              | 0.8                                                                               | 0.0                                                                               | 11.0                                                                              | 3.8                                                                               | 1.4                                                                               | 2.1                                                                               | 1.3                                                                                | 3.5                                                                                 | 3.8                                                                                 | 3.9                                                                                 | 3.8                                                                                 | 3.9                                                                                 |
| Cycle Q Clear(g_c), s        | 0.8                                                                               | 0.0                                                                               | 11.0                                                                              | 3.8                                                                               | 1.4                                                                               | 2.1                                                                               | 1.3                                                                                | 3.5                                                                                 | 3.8                                                                                 | 3.9                                                                                 | 3.8                                                                                 | 3.9                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.47                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.79                                                                                | 1.00                                                                                |                                                                                     | 0.15                                                                                |
| Lane Grp Cap(c), veh/h       | 482                                                                               | 0                                                                                 | 464                                                                               | 205                                                                               | 215                                                                               | 183                                                                               | 62                                                                                 | 266                                                                                 | 246                                                                                 | 169                                                                                 | 372                                                                                 | 382                                                                                 |
| V/C Ratio(X)                 | 0.07                                                                              | 0.00                                                                              | 0.80                                                                              | 0.63                                                                              | 0.25                                                                              | 0.36                                                                              | 0.69                                                                               | 0.47                                                                                | 0.51                                                                                | 0.77                                                                                | 0.39                                                                                | 0.39                                                                                |
| Avail Cap(c_a), veh/h        | 750                                                                               | 0                                                                                 | 722                                                                               | 587                                                                               | 616                                                                               | 524                                                                               | 196                                                                                | 585                                                                                 | 541                                                                                 | 359                                                                                 | 748                                                                                 | 768                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 14.7                                                                              | 0.0                                                                               | 18.4                                                                              | 23.0                                                                              | 21.9                                                                              | 22.2                                                                              | 26.0                                                                               | 21.1                                                                                | 21.3                                                                                | 24.0                                                                                | 18.5                                                                                | 18.5                                                                                |
| Incr Delay (d2), s/veh       | 0.1                                                                               | 0.0                                                                               | 3.5                                                                               | 3.2                                                                               | 0.6                                                                               | 1.2                                                                               | 12.7                                                                               | 1.3                                                                                 | 1.6                                                                                 | 7.2                                                                                 | 0.7                                                                                 | 0.7                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.4                                                                               | 0.0                                                                               | 5.6                                                                               | 2.0                                                                               | 0.8                                                                               | 1.0                                                                               | 0.9                                                                                | 1.8                                                                                 | 1.8                                                                                 | 2.3                                                                                 | 1.9                                                                                 | 2.0                                                                                 |
| LnGrp Delay(d),s/veh         | 14.8                                                                              | 0.0                                                                               | 21.9                                                                              | 26.2                                                                              | 22.5                                                                              | 23.4                                                                              | 38.7                                                                               | 22.4                                                                                | 22.9                                                                                | 31.3                                                                                | 19.1                                                                                | 19.2                                                                                |
| LnGrp LOS                    | B                                                                                 |                                                                                   | C                                                                                 | C                                                                                 | C                                                                                 | C                                                                                 | D                                                                                  | C                                                                                   | C                                                                                   | C                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 403                                                                               |                                                                                   |                                                                                   | 249                                                                               |                                                                                   |                                                                                    | 293                                                                                 |                                                                                     |                                                                                     | 424                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 21.3                                                                              |                                                                                   |                                                                                   | 24.7                                                                              |                                                                                   |                                                                                    | 25.0                                                                                |                                                                                     |                                                                                     | 22.9                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 10.2                                                                              | 13.2                                                                              |                                                                                   | 19.8                                                                              | 6.9                                                                               | 16.4                                                                              |                                                                                    | 11.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |                                                                                    | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 11.0                                                                              | 18.0                                                                              |                                                                                   | 23.0                                                                              | 6.0                                                                               | 23.0                                                                              |                                                                                    | 18.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 5.9                                                                               | 5.8                                                                               |                                                                                   | 13.0                                                                              | 3.3                                                                               | 5.9                                                                               |                                                                                    | 5.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 2.4                                                                               |                                                                                   | 1.8                                                                               | 0.0                                                                               | 2.7                                                                               |                                                                                    | 0.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 23.2                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

HCM 2010 Signalized Intersection Summary  
9: West Bernardo Dr & Via Del Campo

Year 2035 AM  
3/24/2016

|                              |  |  |  |  |  |  |   |   |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|---|
| Movement                     | EBL                                                                               | EBT                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                               |   |   |
| Lane Configurations          |  |  |  |                                                                                   |  |  |   |   |
| Traffic Volume (veh/h)       | 430                                                                               | 620                                                                               | 360                                                                               | 200                                                                               | 130                                                                               | 110                                                                               |   |   |
| Future Volume (veh/h)        | 430                                                                               | 620                                                                               | 360                                                                               | 200                                                                               | 130                                                                               | 110                                                                               |   |   |
| Number                       | 5                                                                                 | 2                                                                                 | 6                                                                                 | 16                                                                                | 7                                                                                 | 14                                                                                |   |   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |   |   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              |   |   |
| Adj Flow Rate, veh/h         | 467                                                                               | 674                                                                               | 391                                                                               | 217                                                                               | 141                                                                               | 120                                                                               |   |   |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 |   |   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |   |   |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |   |
| Cap, veh/h                   | 877                                                                               | 2747                                                                              | 483                                                                               | 265                                                                               | 190                                                                               | 169                                                                               |   |   |
| Arrive On Green              | 0.49                                                                              | 0.78                                                                              | 0.22                                                                              | 0.22                                                                              | 0.11                                                                              | 0.11                                                                              |   |   |
| Sat Flow, veh/h              | 1774                                                                              | 3632                                                                              | 2300                                                                              | 1209                                                                              | 1774                                                                              | 1583                                                                              |   |   |
| Grp Volume(v), veh/h         | 467                                                                               | 674                                                                               | 312                                                                               | 296                                                                               | 141                                                                               | 120                                                                               |   |   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1770                                                                              | 1646                                                                              | 1774                                                                              | 1583                                                                              |   |   |
| Q Serve(g_s), s              | 15.8                                                                              | 4.6                                                                               | 14.6                                                                              | 14.9                                                                              | 6.7                                                                               | 6.4                                                                               |   |   |
| Cycle Q Clear(g_c), s        | 15.8                                                                              | 4.6                                                                               | 14.6                                                                              | 14.9                                                                              | 6.7                                                                               | 6.4                                                                               |   |   |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   | 0.73                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Lane Grp Cap(c), veh/h       | 877                                                                               | 2747                                                                              | 387                                                                               | 360                                                                               | 190                                                                               | 169                                                                               |   |   |
| V/C Ratio(X)                 | 0.53                                                                              | 0.25                                                                              | 0.81                                                                              | 0.82                                                                              | 0.74                                                                              | 0.71                                                                              |   |   |
| Avail Cap(c_a), veh/h        | 877                                                                               | 2747                                                                              | 501                                                                               | 466                                                                               | 449                                                                               | 401                                                                               |   |   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Uniform Delay (d), s/veh     | 15.1                                                                              | 2.7                                                                               | 32.3                                                                              | 32.4                                                                              | 37.8                                                                              | 37.6                                                                              |   |   |
| Incr Delay (d2), s/veh       | 0.6                                                                               | 0.2                                                                               | 7.3                                                                               | 8.8                                                                               | 5.6                                                                               | 5.3                                                                               |   |   |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |   |
| %ile BackOfQ(50%),veh/ln     | 7.8                                                                               | 2.2                                                                               | 7.9                                                                               | 7.6                                                                               | 3.6                                                                               | 5.7                                                                               |   |   |
| LnGrp Delay(d),s/veh         | 15.8                                                                              | 2.9                                                                               | 39.7                                                                              | 41.2                                                                              | 43.4                                                                              | 43.0                                                                              |   |   |
| LnGrp LOS                    | B                                                                                 | A                                                                                 | D                                                                                 | D                                                                                 | D                                                                                 | D                                                                                 |   |   |
| Approach Vol, veh/h          |                                                                                   | 1141                                                                              | 608                                                                               |                                                                                   | 261                                                                               |                                                                                   |   |   |
| Approach Delay, s/veh        |                                                                                   | 8.2                                                                               | 40.4                                                                              |                                                                                   | 43.2                                                                              |                                                                                   |   |   |
| Approach LOS                 |                                                                                   | A                                                                                 | D                                                                                 |                                                                                   | D                                                                                 |                                                                                   |   |   |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8 |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |   |   |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 73.2                                                                              |                                                                                   | 14.0                                                                              | 48.6                                                                              | 24.6                                                                              |   |   |
| Change Period (Y+Rc), s      |                                                                                   | 5.5                                                                               |                                                                                   | * 4.7                                                                             | 5.5                                                                               | * 5.5                                                                             |   |   |
| Max Green Setting (Gmax), s  |                                                                                   | 67.7                                                                              |                                                                                   | * 22                                                                              | 38.6                                                                              | * 25                                                                              |   |   |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 6.6                                                                               |                                                                                   | 8.7                                                                               | 17.8                                                                              | 16.9                                                                              |   |   |
| Green Ext Time (p_c), s      |                                                                                   | 6.9                                                                               |                                                                                   | 0.6                                                                               | 5.9                                                                               | 2.2                                                                               |   |   |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 22.5                                                                              |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |   |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |



HCM 2010 Signalized Intersection Summary  
10: Bernardo Center Dr & West Bernardo Dr

Year 2035 AM  
3/24/2016

|                              |  |  |  |  |  |  |  |      |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|
| Movement                     | EBL                                                                               | EBT                                                                               | WBU                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                                 |      |
| Lane Configurations          |  |  |  |  |  |  |  |      |
| Traffic Volume (veh/h)       | 690                                                                               | 580                                                                               | 0                                                                                 | 610                                                                               | 800                                                                               | 90                                                                                | 240                                                                                 |      |
| Future Volume (veh/h)        | 690                                                                               | 580                                                                               | 0                                                                                 | 610                                                                               | 800                                                                               | 90                                                                                | 240                                                                                 |      |
| Number                       | 1                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 12                                                                                | 3                                                                                 | 18                                                                                  |      |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   |      |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.97                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              |                                                                                   | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                                |      |
| Adj Flow Rate, veh/h         | 750                                                                               | 630                                                                               |                                                                                   | 663                                                                               | 870                                                                               | 98                                                                                | 261                                                                                 |      |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                   |      |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              |                                                                                   | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                |      |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   |      |
| Cap, veh/h                   | 890                                                                               | 2475                                                                              |                                                                                   | 1337                                                                              | 1469                                                                              | 282                                                                               | 661                                                                                 |      |
| Arrive On Green              | 0.26                                                                              | 0.70                                                                              |                                                                                   | 0.38                                                                              | 0.38                                                                              | 0.16                                                                              | 0.16                                                                                |      |
| Sat Flow, veh/h              | 3442                                                                              | 3632                                                                              |                                                                                   | 3632                                                                              | 2715                                                                              | 1774                                                                              | 1583                                                                                |      |
| Grp Volume(v), veh/h         | 750                                                                               | 630                                                                               |                                                                                   | 663                                                                               | 870                                                                               | 98                                                                                | 261                                                                                 |      |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1770                                                                              |                                                                                   | 1770                                                                              | 1357                                                                              | 1774                                                                              | 1583                                                                                |      |
| Q Serve(g_s), s              | 14.4                                                                              | 4.6                                                                               |                                                                                   | 10.0                                                                              | 15.3                                                                              | 3.4                                                                               | 8.0                                                                                 |      |
| Cycle Q Clear(g_c), s        | 14.4                                                                              | 4.6                                                                               |                                                                                   | 10.0                                                                              | 15.3                                                                              | 3.4                                                                               | 8.0                                                                                 |      |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Lane Grp Cap(c), veh/h       | 890                                                                               | 2475                                                                              |                                                                                   | 1337                                                                              | 1469                                                                              | 282                                                                               | 661                                                                                 |      |
| V/C Ratio(X)                 | 0.84                                                                              | 0.25                                                                              |                                                                                   | 0.50                                                                              | 0.59                                                                              | 0.35                                                                              | 0.39                                                                                |      |
| Avail Cap(c_a), veh/h        | 1112                                                                              | 2496                                                                              |                                                                                   | 1524                                                                              | 1612                                                                              | 837                                                                               | 1157                                                                                |      |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Uniform Delay (d), s/veh     | 24.6                                                                              | 3.8                                                                               |                                                                                   | 16.7                                                                              | 11.0                                                                              | 26.2                                                                              | 14.2                                                                                |      |
| Incr Delay (d2), s/veh       | 5.0                                                                               | 0.1                                                                               |                                                                                   | 0.3                                                                               | 0.5                                                                               | 0.7                                                                               | 0.4                                                                                 |      |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 |      |
| %ile BackOfQ(50%),veh/ln     | 7.5                                                                               | 2.2                                                                               |                                                                                   | 4.9                                                                               | 5.7                                                                               | 1.7                                                                               | 3.5                                                                                 |      |
| LnGrp Delay(d),s/veh         | 29.5                                                                              | 3.9                                                                               |                                                                                   | 16.9                                                                              | 11.5                                                                              | 26.9                                                                              | 14.6                                                                                |      |
| LnGrp LOS                    | C                                                                                 | A                                                                                 |                                                                                   | B                                                                                 | B                                                                                 | C                                                                                 | B                                                                                   |      |
| Approach Vol, veh/h          |                                                                                   | 1380                                                                              |                                                                                   | 1533                                                                              |                                                                                   | 359                                                                               |                                                                                     |      |
| Approach Delay, s/veh        |                                                                                   | 17.8                                                                              |                                                                                   | 13.9                                                                              |                                                                                   | 17.9                                                                              |                                                                                     |      |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   | B                                                                                 |                                                                                   | B                                                                                 |                                                                                     |      |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8    |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                     | 8    |
| Phs Duration (G+Y+Rc), s     | 22.5                                                                              | 31.9                                                                              |                                                                                   |                                                                                   |                                                                                   | 54.4                                                                              |                                                                                     | 15.5 |
| Change Period (Y+Rc), s      | 4.4                                                                               | 5.5                                                                               |                                                                                   |                                                                                   |                                                                                   | * 5.5                                                                             |                                                                                     | 4.4  |
| Max Green Setting (Gmax), s  | 22.6                                                                              | 30.1                                                                              |                                                                                   |                                                                                   |                                                                                   | * 49                                                                              |                                                                                     | 33.0 |
| Max Q Clear Time (g_c+I1), s | 16.4                                                                              | 17.3                                                                              |                                                                                   |                                                                                   |                                                                                   | 6.6                                                                               |                                                                                     | 10.0 |
| Green Ext Time (p_c), s      | 1.6                                                                               | 9.1                                                                               |                                                                                   |                                                                                   |                                                                                   | 18.8                                                                              |                                                                                     | 1.1  |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 16.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |

# HCM 2010 Signalized Intersection Summary

## 1: Camino San Bernardo & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 10                                                                                | 960                                                                               | 230                                                                               | 390                                                                               | 800                                                                               | 10                                                                                | 120                                                                                | 10                                                                                  | 370                                                                                 | 70                                                                                  | 20                                                                                  | 30                                                                                  |
| Future Volume (veh/h)        | 10                                                                                | 960                                                                               | 230                                                                               | 390                                                                               | 800                                                                               | 10                                                                                | 120                                                                                | 10                                                                                  | 370                                                                                 | 70                                                                                  | 20                                                                                  | 30                                                                                  |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.99                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 10                                                                                | 1000                                                                              | 240                                                                               | 406                                                                               | 833                                                                               | 10                                                                                | 125                                                                                | 10                                                                                  | 385                                                                                 | 73                                                                                  | 21                                                                                  | 31                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                  | 2                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                               | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 22                                                                                | 1068                                                                              | 256                                                                               | 467                                                                               | 1796                                                                              | 22                                                                                | 440                                                                                | 571                                                                                 | 510                                                                                 | 137                                                                                 | 42                                                                                  | 38                                                                                  |
| Arrive On Green              | 0.01                                                                              | 0.38                                                                              | 0.38                                                                              | 0.14                                                                              | 0.50                                                                              | 0.50                                                                              | 0.32                                                                               | 0.32                                                                                | 0.32                                                                                | 0.32                                                                                | 0.32                                                                                | 0.32                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 2825                                                                              | 676                                                                               | 3442                                                                              | 3582                                                                              | 43                                                                                | 1347                                                                               | 1770                                                                                | 1582                                                                                | 225                                                                                 | 131                                                                                 | 118                                                                                 |
| Grp Volume(v), veh/h         | 10                                                                                | 625                                                                               | 615                                                                               | 406                                                                               | 412                                                                               | 431                                                                               | 125                                                                                | 10                                                                                  | 385                                                                                 | 125                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1731                                                                              | 1721                                                                              | 1770                                                                              | 1855                                                                              | 1347                                                                               | 1770                                                                                | 1582                                                                                | 474                                                                                 | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.5                                                                               | 30.1                                                                              | 30.3                                                                              | 10.2                                                                              | 13.4                                                                              | 13.4                                                                              | 0.0                                                                                | 0.3                                                                                 | 19.3                                                                                | 6.9                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.5                                                                               | 30.1                                                                              | 30.3                                                                              | 10.2                                                                              | 13.4                                                                              | 13.4                                                                              | 7.8                                                                                | 0.3                                                                                 | 19.3                                                                                | 26.2                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.39                                                                              | 1.00                                                                              |                                                                                   | 0.02                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 0.58                                                                                |                                                                                     | 0.25                                                                                |
| Lane Grp Cap(c), veh/h       | 22                                                                                | 669                                                                               | 655                                                                               | 467                                                                               | 887                                                                               | 930                                                                               | 440                                                                                | 571                                                                                 | 510                                                                                 | 217                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.46                                                                              | 0.93                                                                              | 0.94                                                                              | 0.87                                                                              | 0.46                                                                              | 0.46                                                                              | 0.28                                                                               | 0.02                                                                                | 0.75                                                                                | 0.58                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 100                                                                               | 690                                                                               | 675                                                                               | 467                                                                               | 887                                                                               | 930                                                                               | 446                                                                                | 580                                                                                 | 518                                                                                 | 223                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 43.4                                                                              | 26.5                                                                              | 26.5                                                                              | 37.5                                                                              | 14.3                                                                              | 14.3                                                                              | 22.9                                                                               | 20.4                                                                                | 26.8                                                                                | 33.5                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 14.2                                                                              | 19.6                                                                              | 20.8                                                                              | 16.1                                                                              | 0.4                                                                               | 0.4                                                                               | 0.4                                                                                | 0.0                                                                                 | 6.1                                                                                 | 3.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.3                                                                               | 18.2                                                                              | 18.1                                                                              | 5.9                                                                               | 6.6                                                                               | 6.9                                                                               | 2.4                                                                                | 0.2                                                                                 | 9.2                                                                                 | 3.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 57.6                                                                              | 46.1                                                                              | 47.3                                                                              | 53.6                                                                              | 14.7                                                                              | 14.7                                                                              | 23.3                                                                               | 20.4                                                                                | 33.0                                                                                | 37.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | E                                                                                 | D                                                                                 | D                                                                                 | D                                                                                 | B                                                                                 | B                                                                                 | C                                                                                  | C                                                                                   | C                                                                                   | D                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1250                                                                              |                                                                                   |                                                                                   | 1249                                                                              |                                                                                   |                                                                                    | 520                                                                                 |                                                                                     |                                                                                     | 125                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 46.8                                                                              |                                                                                   |                                                                                   | 27.4                                                                              |                                                                                   |                                                                                    | 30.4                                                                                |                                                                                     |                                                                                     | 37.0                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 16.0                                                                              | 39.0                                                                              |                                                                                   | 33.5                                                                              | 5.1                                                                               | 49.9                                                                              |                                                                                    | 33.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 5.5                                                                               |                                                                                   | 5.0                                                                               | 4.0                                                                               | 5.5                                                                               |                                                                                    | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 12.0                                                                              | 34.5                                                                              |                                                                                   | 29.0                                                                              | 5.0                                                                               | 41.5                                                                              |                                                                                    | 29.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 12.2                                                                              | 32.3                                                                              |                                                                                   | 28.2                                                                              | 2.5                                                                               | 15.4                                                                              |                                                                                    | 21.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 1.1                                                                               |                                                                                   | 0.3                                                                               | 0.0                                                                               | 14.7                                                                              |                                                                                    | 2.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 36.0                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 2: Via Del Campo & Rancho Bernardo Rd

3/24/2016

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|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 20                                                                                | 1430                                                                              | 60                                                                                | 30                                                                                | 1030                                                                              | 10                                                                                | 350                                                                                | 10                                                                                  | 420                                                                                 | 10                                                                                  | 10                                                                                  | 10                                                                                  |
| Future Volume (veh/h)        | 20                                                                                | 1430                                                                              | 60                                                                                | 30                                                                                | 1030                                                                              | 10                                                                                | 350                                                                                | 10                                                                                  | 420                                                                                 | 10                                                                                  | 10                                                                                  | 10                                                                                  |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.98                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1900                                                                               | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 22                                                                                | 1554                                                                              | 65                                                                                | 33                                                                                | 1120                                                                              | 11                                                                                | 380                                                                                | 11                                                                                  | 457                                                                                 | 11                                                                                  | 11                                                                                  | 11                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 0                                                                                  | 1                                                                                   | 1                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 29                                                                                | 1749                                                                              | 73                                                                                | 42                                                                                | 1841                                                                              | 18                                                                                | 274                                                                                | 7                                                                                   | 569                                                                                 | 33                                                                                  | 32                                                                                  | 16                                                                                  |
| Arrive On Green              | 0.02                                                                              | 0.51                                                                              | 0.51                                                                              | 0.02                                                                              | 0.51                                                                              | 0.51                                                                              | 0.36                                                                               | 0.36                                                                                | 0.36                                                                                | 0.36                                                                                | 0.36                                                                                | 0.36                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 3462                                                                              | 144                                                                               | 1774                                                                              | 3591                                                                              | 35                                                                                | 616                                                                                | 18                                                                                  | 1560                                                                                | 0                                                                                   | 88                                                                                  | 44                                                                                  |
| Grp Volume(v), veh/h         | 22                                                                                | 792                                                                               | 827                                                                               | 33                                                                                | 552                                                                               | 579                                                                               | 391                                                                                | 0                                                                                   | 457                                                                                 | 33                                                                                  | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1837                                                                              | 1774                                                                              | 1770                                                                              | 1856                                                                              | 634                                                                                | 0                                                                                   | 1560                                                                                | 132                                                                                 | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 1.8                                                                               | 58.5                                                                              | 59.2                                                                              | 2.7                                                                               | 32.3                                                                              | 32.3                                                                              | 0.0                                                                                | 0.0                                                                                 | 38.4                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 1.8                                                                               | 58.5                                                                              | 59.2                                                                              | 2.7                                                                               | 32.3                                                                              | 32.3                                                                              | 53.3                                                                               | 0.0                                                                                 | 38.4                                                                                | 53.3                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.08                                                                              | 1.00                                                                              |                                                                                   | 0.02                                                                              | 0.97                                                                               |                                                                                     | 1.00                                                                                | 0.33                                                                                |                                                                                     | 0.33                                                                                |
| Lane Grp Cap(c), veh/h       | 29                                                                                | 894                                                                               | 928                                                                               | 42                                                                                | 907                                                                               | 952                                                                               | 280                                                                                | 0                                                                                   | 569                                                                                 | 81                                                                                  | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.77                                                                              | 0.89                                                                              | 0.89                                                                              | 0.78                                                                              | 0.61                                                                              | 0.61                                                                              | 1.40                                                                               | 0.00                                                                                | 0.80                                                                                | 0.41                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 75                                                                                | 923                                                                               | 959                                                                               | 64                                                                                | 915                                                                               | 960                                                                               | 280                                                                                | 0                                                                                   | 569                                                                                 | 81                                                                                  | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 71.6                                                                              | 32.4                                                                              | 32.5                                                                              | 70.9                                                                              | 25.2                                                                              | 25.2                                                                              | 51.0                                                                               | 0.0                                                                                 | 41.7                                                                                | 38.3                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 33.8                                                                              | 10.1                                                                              | 10.3                                                                              | 28.2                                                                              | 1.2                                                                               | 1.1                                                                               | 198.5                                                                              | 0.0                                                                                 | 8.2                                                                                 | 3.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 1.2                                                                               | 31.1                                                                              | 32.5                                                                              | 1.7                                                                               | 16.1                                                                              | 16.9                                                                              | 26.7                                                                               | 0.0                                                                                 | 17.9                                                                                | 0.9                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 105.3                                                                             | 42.5                                                                              | 42.8                                                                              | 99.1                                                                              | 26.4                                                                              | 26.3                                                                              | 249.5                                                                              | 0.0                                                                                 | 49.8                                                                                | 41.6                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | F                                                                                 | D                                                                                 | D                                                                                 | F                                                                                 | C                                                                                 | C                                                                                 | F                                                                                  |                                                                                     | D                                                                                   | D                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1641                                                                              |                                                                                   |                                                                                   | 1164                                                                              |                                                                                   |                                                                                    | 848                                                                                 |                                                                                     |                                                                                     | 33                                                                                  |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 43.5                                                                              |                                                                                   |                                                                                   | 28.4                                                                              |                                                                                   |                                                                                    | 141.9                                                                               |                                                                                     |                                                                                     | 41.6                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | F                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 7.9                                                                               | 79.7                                                                              |                                                                                   | 58.5                                                                              | 6.8                                                                               | 80.8                                                                              |                                                                                    | 58.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.4                                                                               | 5.9                                                                               |                                                                                   | * 5.2                                                                             | 4.4                                                                               | * 5.9                                                                             |                                                                                    | 5.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 5.3                                                                               | 76.2                                                                              |                                                                                   | * 53                                                                              | 6.2                                                                               | * 76                                                                              |                                                                                    | 53.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 4.7                                                                               | 61.2                                                                              |                                                                                   | 55.3                                                                              | 3.8                                                                               | 34.3                                                                              |                                                                                    | 55.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 12.6                                                                              |                                                                                   | 0.0                                                                               | 0.0                                                                               | 27.6                                                                              |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          | 61.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 | E                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 3: Project Dwy/Matinal Rd & Rancho Bernardo Rd

3/24/2016

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|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 110                                                                               | 1600                                                                              | 0                                                                                 | 0                                                                                 | 990                                                                               | 60                                                                                | 0                                                                                  | 0                                                                                   | 0                                                                                   | 50                                                                                  | 0                                                                                   | 120                                                                                 |
| Future Volume (veh/h)        | 110                                                                               | 1600                                                                              | 0                                                                                 | 0                                                                                 | 990                                                                               | 60                                                                                | 0                                                                                  | 0                                                                                   | 0                                                                                   | 50                                                                                  | 0                                                                                   | 120                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.99                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 120                                                                               | 1739                                                                              | 0                                                                                 | 0                                                                                 | 1076                                                                              | 65                                                                                | 0                                                                                  | 0                                                                                   | 0                                                                                   | 54                                                                                  | 0                                                                                   | 130                                                                                 |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                  | 1                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 154                                                                               | 2429                                                                              | 0                                                                                 | 2                                                                                 | 1843                                                                              | 111                                                                               | 100                                                                                | 284                                                                                 | 0                                                                                   | 117                                                                                 | 16                                                                                  | 166                                                                                 |
| Arrive On Green              | 0.09                                                                              | 0.69                                                                              | 0.00                                                                              | 0.00                                                                              | 0.54                                                                              | 0.54                                                                              | 0.00                                                                               | 0.00                                                                                | 0.00                                                                                | 0.15                                                                                | 0.00                                                                                | 0.15                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 3632                                                                              | 0                                                                                 | 1774                                                                              | 3391                                                                              | 205                                                                               | 1255                                                                               | 1863                                                                                | 0                                                                                   | 345                                                                                 | 107                                                                                 | 1089                                                                                |
| Grp Volume(v), veh/h         | 120                                                                               | 1739                                                                              | 0                                                                                 | 0                                                                                 | 561                                                                               | 580                                                                               | 0                                                                                  | 0                                                                                   | 0                                                                                   | 184                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 0                                                                                 | 1774                                                                              | 1770                                                                              | 1827                                                                              | 1255                                                                               | 1863                                                                                | 0                                                                                   | 1541                                                                                | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 4.8                                                                               | 21.8                                                                              | 0.0                                                                               | 0.0                                                                               | 15.2                                                                              | 15.2                                                                              | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 5.8                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 4.8                                                                               | 21.8                                                                              | 0.0                                                                               | 0.0                                                                               | 15.2                                                                              | 15.2                                                                              | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 8.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                              |                                                                                   | 0.11                                                                              | 1.00                                                                               |                                                                                     | 0.00                                                                                | 0.29                                                                                |                                                                                     | 0.71                                                                                |
| Lane Grp Cap(c), veh/h       | 154                                                                               | 2429                                                                              | 0                                                                                 | 2                                                                                 | 962                                                                               | 993                                                                               | 100                                                                                | 284                                                                                 | 0                                                                                   | 299                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.78                                                                              | 0.72                                                                              | 0.00                                                                              | 0.00                                                                              | 0.58                                                                              | 0.58                                                                              | 0.00                                                                               | 0.00                                                                                | 0.00                                                                                | 0.61                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 321                                                                               | 2522                                                                              | 0                                                                                 | 123                                                                               | 1089                                                                              | 1124                                                                              | 412                                                                                | 747                                                                                 | 0                                                                                   | 663                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                               | 0.00                                                                                | 0.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 32.1                                                                              | 6.9                                                                               | 0.0                                                                               | 0.0                                                                               | 11.0                                                                              | 11.0                                                                              | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 29.2                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 8.1                                                                               | 1.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.6                                                                               | 0.6                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 2.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 2.7                                                                               | 10.7                                                                              | 0.0                                                                               | 0.0                                                                               | 7.5                                                                               | 7.7                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 3.7                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 40.2                                                                              | 7.9                                                                               | 0.0                                                                               | 0.0                                                                               | 11.6                                                                              | 11.6                                                                              | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 31.3                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | D                                                                                 | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 | B                                                                                 |                                                                                    |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1859                                                                              |                                                                                   |                                                                                   | 1141                                                                              |                                                                                   |                                                                                    | 0                                                                                   |                                                                                     |                                                                                     | 184                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 10.0                                                                              |                                                                                   |                                                                                   | 11.6                                                                              |                                                                                   |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     | 31.3                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 0.0                                                                               | 56.3                                                                              |                                                                                   | 15.5                                                                              | 10.3                                                                              | 46.1                                                                              |                                                                                    | 15.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 7.0                                                                               |                                                                                   | 4.6                                                                               | 4.0                                                                               | * 7                                                                               |                                                                                    | * 4.6                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 5.0                                                                               | 51.2                                                                              |                                                                                   | 28.2                                                                              | 13.0                                                                              | * 44                                                                              |                                                                                    | * 29                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 0.0                                                                               | 23.8                                                                              |                                                                                   | 10.2                                                                              | 6.8                                                                               | 17.2                                                                              |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 22.1                                                                              |                                                                                   | 1.0                                                                               | 0.1                                                                               | 21.8                                                                              |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 11.8                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 4: West Bernardo Dr & Rancho Bernardo Rd

3/24/2016

|                              |                                                                                    |                                                                                                                                                                      |  |                                                                                    |                                                                                    |  |                                                                                      |                                                                                      |  |                                                                                      |                                                                                      |  |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                                                                                                                 | EBT                                                                                                                                                                                                                                                   | EBR                                                                               | WBL                                                                                                                                                                 | WBT                                                                                                                                                                 | WBR                                                                               | NBL                                                                                                                                                                     | NBT                                                                                                                                                                     | NBR                                                                                 | SBL                                                                                                                                                                     | SBT                                                                                                                                                                     | SBR                                                                                 |
| Lane Configurations          |   |    |                                                                                   |   |   |  |   |   |  |   |   |                                                                                     |
| Traffic Volume (veh/h)       | 160                                                                                                                                                                 | 1580                                                                                                                                                                                                                                                  | 50                                                                                | 200                                                                                                                                                                 | 990                                                                                                                                                                 | 510                                                                               | 180                                                                                                                                                                     | 360                                                                                                                                                                     | 700                                                                                 | 350                                                                                                                                                                     | 90                                                                                                                                                                      | 70                                                                                  |
| Future Volume (veh/h)        | 160                                                                                                                                                                 | 1580                                                                                                                                                                                                                                                  | 50                                                                                | 200                                                                                                                                                                 | 990                                                                                                                                                                 | 510                                                                               | 180                                                                                                                                                                     | 360                                                                                                                                                                     | 700                                                                                 | 350                                                                                                                                                                     | 90                                                                                                                                                                      | 70                                                                                  |
| Number                       | 5                                                                                                                                                                   | 2                                                                                                                                                                                                                                                     | 12                                                                                | 1                                                                                                                                                                   | 6                                                                                                                                                                   | 16                                                                                | 3                                                                                                                                                                       | 8                                                                                                                                                                       | 18                                                                                  | 7                                                                                                                                                                       | 4                                                                                                                                                                       | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                                                                                                   | 0                                                                                                                                                                                                                                                     | 0                                                                                 | 0                                                                                                                                                                   | 0                                                                                                                                                                   | 0                                                                                 | 0                                                                                                                                                                       | 0                                                                                                                                                                       | 0                                                                                   | 0                                                                                                                                                                       | 0                                                                                                                                                                       | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                                                                                                                |                                                                                                                                                                                                                                                       | 1.00                                                                              | 1.00                                                                                                                                                                |                                                                                                                                                                     | 1.00                                                                              | 1.00                                                                                                                                                                    |                                                                                                                                                                         | 1.00                                                                                | 1.00                                                                                                                                                                    |                                                                                                                                                                         | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                                                                                                                | 1.00                                                                                                                                                                                                                                                  | 1.00                                                                              | 1.00                                                                                                                                                                | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                                                                                                                    | 1.00                                                                                                                                                                    | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                                                                                                    | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                                                                                                                | 1863                                                                                                                                                                                                                                                  | 1900                                                                              | 1863                                                                                                                                                                | 1863                                                                                                                                                                | 1863                                                                              | 1863                                                                                                                                                                    | 1863                                                                                                                                                                    | 1863                                                                                | 1863                                                                                                                                                                    | 1863                                                                                                                                                                    | 1900                                                                                |
| Adj Flow Rate, veh/h         | 163                                                                                                                                                                 | 1612                                                                                                                                                                                                                                                  | 51                                                                                | 204                                                                                                                                                                 | 1010                                                                                                                                                                | 520                                                                               | 184                                                                                                                                                                     | 367                                                                                                                                                                     | 714                                                                                 | 357                                                                                                                                                                     | 92                                                                                                                                                                      | 71                                                                                  |
| Adj No. of Lanes             | 2                                                                                                                                                                   | 3                                                                                                                                                                                                                                                     | 0                                                                                 | 2                                                                                                                                                                   | 2                                                                                                                                                                   | 1                                                                                 | 2                                                                                                                                                                       | 2                                                                                                                                                                       | 1                                                                                   | 2                                                                                                                                                                       | 2                                                                                                                                                                       | 0                                                                                   |
| Peak Hour Factor             | 0.98                                                                                                                                                                | 0.98                                                                                                                                                                                                                                                  | 0.98                                                                              | 0.98                                                                                                                                                                | 0.98                                                                                                                                                                | 0.98                                                                              | 0.98                                                                                                                                                                    | 0.98                                                                                                                                                                    | 0.98                                                                                | 0.98                                                                                                                                                                    | 0.98                                                                                                                                                                    | 0.98                                                                                |
| Percent Heavy Veh, %         | 2                                                                                                                                                                   | 2                                                                                                                                                                                                                                                     | 2                                                                                 | 2                                                                                                                                                                   | 2                                                                                                                                                                   | 2                                                                                 | 2                                                                                                                                                                       | 2                                                                                                                                                                       | 2                                                                                   | 2                                                                                                                                                                       | 2                                                                                                                                                                       | 2                                                                                   |
| Cap, veh/h                   | 233                                                                                                                                                                 | 1736                                                                                                                                                                                                                                                  | 55                                                                                | 271                                                                                                                                                                 | 1258                                                                                                                                                                | 561                                                                               | 254                                                                                                                                                                     | 1012                                                                                                                                                                    | 576                                                                                 | 437                                                                                                                                                                     | 672                                                                                                                                                                     | 476                                                                                 |
| Arrive On Green              | 0.07                                                                                                                                                                | 0.34                                                                                                                                                                                                                                                  | 0.34                                                                              | 0.08                                                                                                                                                                | 0.36                                                                                                                                                                | 0.36                                                                              | 0.07                                                                                                                                                                    | 0.29                                                                                                                                                                    | 0.29                                                                                | 0.13                                                                                                                                                                    | 0.34                                                                                                                                                                    | 0.34                                                                                |
| Sat Flow, veh/h              | 3442                                                                                                                                                                | 5064                                                                                                                                                                                                                                                  | 160                                                                               | 3442                                                                                                                                                                | 3539                                                                                                                                                                | 1579                                                                              | 3442                                                                                                                                                                    | 3539                                                                                                                                                                    | 1578                                                                                | 3442                                                                                                                                                                    | 1981                                                                                                                                                                    | 1403                                                                                |
| Grp Volume(v), veh/h         | 163                                                                                                                                                                 | 1079                                                                                                                                                                                                                                                  | 584                                                                               | 204                                                                                                                                                                 | 1010                                                                                                                                                                | 520                                                                               | 184                                                                                                                                                                     | 367                                                                                                                                                                     | 714                                                                                 | 357                                                                                                                                                                     | 81                                                                                                                                                                      | 82                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                                                                                                                | 1695                                                                                                                                                                                                                                                  | 1834                                                                              | 1721                                                                                                                                                                | 1770                                                                                                                                                                | 1579                                                                              | 1721                                                                                                                                                                    | 1770                                                                                                                                                                    | 1578                                                                                | 1721                                                                                                                                                                    | 1770                                                                                                                                                                    | 1615                                                                                |
| Q Serve(g_s), s              | 5.6                                                                                                                                                                 | 37.2                                                                                                                                                                                                                                                  | 37.2                                                                              | 7.0                                                                                                                                                                 | 31.2                                                                                                                                                                | 25.9                                                                              | 6.3                                                                                                                                                                     | 10.0                                                                                                                                                                    | 29.1                                                                                | 12.3                                                                                                                                                                    | 3.9                                                                                                                                                                     | 4.3                                                                                 |
| Cycle Q Clear(g_c), s        | 5.6                                                                                                                                                                 | 37.2                                                                                                                                                                                                                                                  | 37.2                                                                              | 7.0                                                                                                                                                                 | 31.2                                                                                                                                                                | 25.9                                                                              | 6.3                                                                                                                                                                     | 10.0                                                                                                                                                                    | 29.1                                                                                | 12.3                                                                                                                                                                    | 3.9                                                                                                                                                                     | 4.3                                                                                 |
| Prop In Lane                 | 1.00                                                                                                                                                                |                                                                                                                                                                                                                                                       | 0.09                                                                              | 1.00                                                                                                                                                                |                                                                                                                                                                     | 1.00                                                                              | 1.00                                                                                                                                                                    |                                                                                                                                                                         | 1.00                                                                                | 1.00                                                                                                                                                                    |                                                                                                                                                                         | 0.87                                                                                |
| Lane Grp Cap(c), veh/h       | 233                                                                                                                                                                 | 1162                                                                                                                                                                                                                                                  | 629                                                                               | 271                                                                                                                                                                 | 1258                                                                                                                                                                | 561                                                                               | 254                                                                                                                                                                     | 1012                                                                                                                                                                    | 576                                                                                 | 437                                                                                                                                                                     | 600                                                                                                                                                                     | 548                                                                                 |
| V/C Ratio(X)                 | 0.70                                                                                                                                                                | 0.93                                                                                                                                                                                                                                                  | 0.93                                                                              | 0.75                                                                                                                                                                | 0.80                                                                                                                                                                | 0.93                                                                              | 0.72                                                                                                                                                                    | 0.36                                                                                                                                                                    | 1.24                                                                                | 0.82                                                                                                                                                                    | 0.14                                                                                                                                                                    | 0.15                                                                                |
| Avail Cap(c_a), veh/h        | 233                                                                                                                                                                 | 1176                                                                                                                                                                                                                                                  | 636                                                                               | 528                                                                                                                                                                 | 1584                                                                                                                                                                | 707                                                                               | 967                                                                                                                                                                     | 1140                                                                                                                                                                    | 633                                                                                 | 854                                                                                                                                                                     | 600                                                                                                                                                                     | 548                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                                                                                                                | 1.00                                                                                                                                                                                                                                                  | 1.00                                                                              | 1.00                                                                                                                                                                | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                                                                                                                    | 1.00                                                                                                                                                                    | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                                                                                                    | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                                                                                                                | 1.00                                                                                                                                                                                                                                                  | 1.00                                                                              | 1.00                                                                                                                                                                | 1.00                                                                                                                                                                | 1.00                                                                              | 1.00                                                                                                                                                                    | 1.00                                                                                                                                                                    | 1.00                                                                                | 1.00                                                                                                                                                                    | 1.00                                                                                                                                                                    | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 55.3                                                                                                                                                                | 38.4                                                                                                                                                                                                                                                  | 38.4                                                                              | 54.8                                                                                                                                                                | 35.3                                                                                                                                                                | 17.1                                                                              | 55.0                                                                                                                                                                    | 34.5                                                                                                                                                                    | 25.1                                                                                | 51.6                                                                                                                                                                    | 27.8                                                                                                                                                                    | 27.9                                                                                |
| Incr Delay (d2), s/veh       | 8.8                                                                                                                                                                 | 12.6                                                                                                                                                                                                                                                  | 20.0                                                                              | 4.2                                                                                                                                                                 | 2.5                                                                                                                                                                 | 16.0                                                                              | 3.9                                                                                                                                                                     | 0.2                                                                                                                                                                     | 122.1                                                                               | 3.8                                                                                                                                                                     | 0.1                                                                                                                                                                     | 0.1                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                                                                                                                 | 0.0                                                                                                                                                                                                                                                   | 0.0                                                                               | 0.0                                                                                                                                                                 | 0.0                                                                                                                                                                 | 0.0                                                                               | 0.0                                                                                                                                                                     | 0.0                                                                                                                                                                     | 0.0                                                                                 | 0.0                                                                                                                                                                     | 0.0                                                                                                                                                                     | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 3.0                                                                                                                                                                 | 19.4                                                                                                                                                                                                                                                  | 22.3                                                                              | 3.5                                                                                                                                                                 | 15.7                                                                                                                                                                | 13.7                                                                              | 3.2                                                                                                                                                                     | 4.9                                                                                                                                                                     | 33.1                                                                                | 6.1                                                                                                                                                                     | 1.9                                                                                                                                                                     | 1.9                                                                                 |
| LnGrp Delay(d),s/veh         | 64.2                                                                                                                                                                | 51.0                                                                                                                                                                                                                                                  | 58.4                                                                              | 59.0                                                                                                                                                                | 37.7                                                                                                                                                                | 33.1                                                                              | 58.9                                                                                                                                                                    | 34.7                                                                                                                                                                    | 147.2                                                                               | 55.4                                                                                                                                                                    | 27.9                                                                                                                                                                    | 28.0                                                                                |
| LnGrp LOS                    | E                                                                                                                                                                   | D                                                                                                                                                                                                                                                     | E                                                                                 | E                                                                                                                                                                   | D                                                                                                                                                                   | C                                                                                 | E                                                                                                                                                                       | C                                                                                                                                                                       | F                                                                                   | E                                                                                                                                                                       | C                                                                                                                                                                       | C                                                                                   |
| Approach Vol, veh/h          | 1826                                                                                                                                                                |                                                                                                                                                                                                                                                       |                                                                                   |                                                                                                                                                                     | 1734                                                                                                                                                                |                                                                                   |                                                                                                                                                                         |                                                                                                                                                                         | 1265                                                                                |                                                                                                                                                                         | 520                                                                                                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 54.5                                                                                                                                                                |                                                                                                                                                                                                                                                       |                                                                                   |                                                                                                                                                                     | 38.8                                                                                                                                                                |                                                                                   |                                                                                                                                                                         |                                                                                                                                                                         | 101.7                                                                               |                                                                                                                                                                         | 46.8                                                                                                                                                                    |                                                                                     |
| Approach LOS                 | D                                                                                                                                                                   |                                                                                                                                                                                                                                                       |                                                                                   |                                                                                                                                                                     | D                                                                                                                                                                   |                                                                                   |                                                                                                                                                                         |                                                                                                                                                                         | F                                                                                   |                                                                                                                                                                         | D                                                                                                                                                                       |                                                                                     |
| Timer                        | 1                                                                                                                                                                   | 2                                                                                                                                                                                                                                                     | 3                                                                                 | 4                                                                                                                                                                   | 5                                                                                                                                                                   | 6                                                                                 | 7                                                                                                                                                                       | 8                                                                                                                                                                       |                                                                                     |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |
| Assigned Phs                 | 1                                                                                                                                                                   | 2                                                                                                                                                                                                                                                     | 3                                                                                 | 4                                                                                                                                                                   | 5                                                                                                                                                                   | 6                                                                                 | 7                                                                                                                                                                       | 8                                                                                                                                                                       |                                                                                     |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 13.9                                                                                                                                                                | 47.5                                                                                                                                                                                                                                                  | 13.4                                                                              | 46.6                                                                                                                                                                | 12.6                                                                                                                                                                | 48.8                                                                              | 19.8                                                                                                                                                                    | 40.1                                                                                                                                                                    |                                                                                     |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |
| Change Period (Y+Rc), s      | 4.4                                                                                                                                                                 | 5.9                                                                                                                                                                                                                                                   | 4.4                                                                               | 5.4                                                                                                                                                                 | 4.4                                                                                                                                                                 | 5.7                                                                               | 4.4                                                                                                                                                                     | 5.4                                                                                                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |
| Max Green Setting (Gmax), s  | 18.6                                                                                                                                                                | 42.1                                                                                                                                                                                                                                                  | 34.1                                                                              | 35.1                                                                                                                                                                | 6.6                                                                                                                                                                 | 54.3                                                                              | 30.1                                                                                                                                                                    | 39.1                                                                                                                                                                    |                                                                                     |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 9.0                                                                                                                                                                 | 39.2                                                                                                                                                                                                                                                  | 8.3                                                                               | 6.3                                                                                                                                                                 | 7.6                                                                                                                                                                 | 33.2                                                                              | 14.3                                                                                                                                                                    | 31.1                                                                                                                                                                    |                                                                                     |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |
| Green Ext Time (p_c), s      | 0.5                                                                                                                                                                 | 2.4                                                                                                                                                                                                                                                   | 0.6                                                                               | 7.4                                                                                                                                                                 | 0.0                                                                                                                                                                 | 9.9                                                                               | 1.1                                                                                                                                                                     | 3.5                                                                                                                                                                     |                                                                                     |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |
| Intersection Summary         |                                                                                                                                                                     |                                                                                                                                                                                                                                                       |                                                                                   |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                   |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |
| HCM 2010 Ctrl Delay          | 59.9                                                                                                                                                                |                                                                                                                                                                                                                                                       |                                                                                   |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                   |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |
| HCM 2010 LOS                 | E                                                                                                                                                                   |                                                                                                                                                                                                                                                       |                                                                                   |                                                                                                                                                                     |                                                                                                                                                                     |                                                                                   |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |                                                                                                                                                                         |                                                                                                                                                                         |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 5: I-15 SB Ramps & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |   |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                                | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |                                                                                     |  |                                                                                     |  |
| Traffic Volume (veh/h)       | 0                                                                                 | 1680                                                                              | 940                                                                               | 0                                                                                 | 1220                                                                              | 600                                                                                | 0                                                                                   | 0                                                                                   | 0                                                                                   | 460                                                                                 | 0                                                                                   | 460                                                                                 |
| Future Volume (veh/h)        | 0                                                                                 | 1680                                                                              | 940                                                                               | 0                                                                                 | 1220                                                                              | 600                                                                                | 0                                                                                   | 0                                                                                   | 0                                                                                   | 460                                                                                 | 0                                                                                   | 460                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                 |                                                                                     |                                                                                     |                                                                                     | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  |                                                                                     |                                                                                     |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                               |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 0                                                                                 | 1863                                                                              | 1863                                                                              | 0                                                                                 | 1863                                                                              | 1863                                                                               |                                                                                     |                                                                                     |                                                                                     | 1863                                                                                | 0                                                                                   | 1863                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 2195                                                                              | 682                                                                               | 0                                                                                 | 1271                                                                              | 0                                                                                  |                                                                                     |                                                                                     |                                                                                     | 479                                                                                 | 0                                                                                   | 479                                                                                 |
| Adj No. of Lanes             | 0                                                                                 | 3                                                                                 | 1                                                                                 | 0                                                                                 | 3                                                                                 | 1                                                                                  |                                                                                     |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 2                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.96                                                                              | 0.96                                                                              | 0.92                                                                              | 0.96                                                                              | 0.96                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.96                                                                                | 0.92                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %         | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                  |                                                                                     |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 0                                                                                 | 3767                                                                              | 1067                                                                              | 0                                                                                 | 3767                                                                              | 1067                                                                               |                                                                                     |                                                                                     |                                                                                     | 692                                                                                 | 0                                                                                   | 560                                                                                 |
| Arrive On Green              | 0.00                                                                              | 0.67                                                                              | 0.67                                                                              | 0.00                                                                              | 1.00                                                                              | 0.00                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.20                                                                                | 0.00                                                                                | 0.20                                                                                |
| Sat Flow, veh/h              | 0                                                                                 | 5588                                                                              | 1583                                                                              | 0                                                                                 | 5588                                                                              | 1583                                                                               |                                                                                     |                                                                                     |                                                                                     | 3442                                                                                | 0                                                                                   | 2787                                                                                |
| Grp Volume(v), veh/h         | 0                                                                                 | 2195                                                                              | 682                                                                               | 0                                                                                 | 1271                                                                              | 0                                                                                  |                                                                                     |                                                                                     |                                                                                     | 479                                                                                 | 0                                                                                   | 479                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1863                                                                              | 1583                                                                              | 0                                                                                 | 1863                                                                              | 1583                                                                               |                                                                                     |                                                                                     |                                                                                     | 1721                                                                                | 0                                                                                   | 1393                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 21.1                                                                              | 24.7                                                                              | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                |                                                                                     |                                                                                     |                                                                                     | 12.9                                                                                | 0.0                                                                                 | 16.6                                                                                |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 21.1                                                                              | 24.7                                                                              | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                |                                                                                     |                                                                                     |                                                                                     | 12.9                                                                                | 0.0                                                                                 | 16.6                                                                                |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 1.00                                                                              | 0.00                                                                              |                                                                                   | 1.00                                                                               |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 3767                                                                              | 1067                                                                              | 0                                                                                 | 3767                                                                              | 1067                                                                               |                                                                                     |                                                                                     |                                                                                     | 692                                                                                 | 0                                                                                   | 560                                                                                 |
| V/C Ratio(X)                 | 0.00                                                                              | 0.58                                                                              | 0.64                                                                              | 0.00                                                                              | 0.34                                                                              | 0.00                                                                               |                                                                                     |                                                                                     |                                                                                     | 0.69                                                                                | 0.00                                                                                | 0.86                                                                                |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 3767                                                                              | 1067                                                                              | 0                                                                                 | 3767                                                                              | 1067                                                                               |                                                                                     |                                                                                     |                                                                                     | 767                                                                                 | 0                                                                                   | 621                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                              | 2.00                                                                               |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.00                                                                              | 0.12                                                                              | 0.12                                                                              | 0.00                                                                              | 0.83                                                                              | 0.00                                                                               |                                                                                     |                                                                                     |                                                                                     | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 8.7                                                                               | 9.3                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                |                                                                                     |                                                                                     |                                                                                     | 37.1                                                                                | 0.0                                                                                 | 38.6                                                                                |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.1                                                                               | 0.4                                                                               | 0.0                                                                               | 0.2                                                                               | 0.0                                                                                |                                                                                     |                                                                                     |                                                                                     | 2.4                                                                                 | 0.0                                                                                 | 10.5                                                                                |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                |                                                                                     |                                                                                     |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 10.8                                                                              | 10.7                                                                              | 0.0                                                                               | 0.1                                                                               | 0.0                                                                                |                                                                                     |                                                                                     |                                                                                     | 6.3                                                                                 | 0.0                                                                                 | 7.2                                                                                 |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 8.8                                                                               | 9.7                                                                               | 0.0                                                                               | 0.2                                                                               | 0.0                                                                                |                                                                                     |                                                                                     |                                                                                     | 39.5                                                                                | 0.0                                                                                 | 49.0                                                                                |
| LnGrp LOS                    |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   | A                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     | D                                                                                   |                                                                                     | D                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 2877                                                                              |                                                                                   |                                                                                   | 1271                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 958                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 9.0                                                                               |                                                                                   |                                                                                   | 0.2                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 44.2                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                  | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 73.8                                                                              |                                                                                   | 26.2                                                                              |                                                                                   | 73.8                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 6.4                                                                               |                                                                                   | 6.1                                                                               |                                                                                   | 6.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 65.2                                                                              |                                                                                   | 22.3                                                                              |                                                                                   | 65.2                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 26.7                                                                              |                                                                                   | 18.6                                                                              |                                                                                   | 2.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 36.1                                                                              |                                                                                   | 1.5                                                                               |                                                                                   | 56.9                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 13.4                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 6: I-15 NB Ramps & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |                                                                                   |  |  |  |                                                                                     |  |                                                                                     |                                                                                     |                                                                                     |
| Traffic Volume (veh/h)       | 0                                                                                 | 990                                                                               | 1150                                                                              | 0                                                                                 | 1110                                                                              | 510                                                                               | 710                                                                                | 0                                                                                   | 490                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 0                                                                                 | 990                                                                               | 1150                                                                              | 0                                                                                 | 1110                                                                              | 510                                                                               | 710                                                                                | 0                                                                                   | 490                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 0                                                                                 | 1863                                                                              | 1863                                                                              | 0                                                                                 | 1863                                                                              | 1863                                                                              | 1863                                                                               | 0                                                                                   | 1863                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Adj Flow Rate, veh/h         | 0                                                                                 | 1053                                                                              | 0                                                                                 | 0                                                                                 | 1181                                                                              | 543                                                                               | 755                                                                                | 0                                                                                   | 521                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Adj No. of Lanes             | 0                                                                                 | 3                                                                                 | 1                                                                                 | 0                                                                                 | 3                                                                                 | 1                                                                                 | 2                                                                                  | 0                                                                                   | 2                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Peak Hour Factor             | 0.92                                                                              | 0.94                                                                              | 0.94                                                                              | 0.92                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                               | 0.92                                                                                | 0.94                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Percent Heavy Veh, %         | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 0                                                                                   | 2                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Cap, veh/h                   | 0                                                                                 | 3393                                                                              | 961                                                                               | 0                                                                                 | 3087                                                                              | 961                                                                               | 922                                                                                | 0                                                                                   | 747                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Arrive On Green              | 0.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 0.61                                                                              | 0.61                                                                              | 0.27                                                                               | 0.00                                                                                | 0.27                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Sat Flow, veh/h              | 0                                                                                 | 5588                                                                              | 1583                                                                              | 0                                                                                 | 5253                                                                              | 1583                                                                              | 3442                                                                               | 0                                                                                   | 2787                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Grp Volume(v), veh/h         | 0                                                                                 | 1053                                                                              | 0                                                                                 | 0                                                                                 | 1181                                                                              | 543                                                                               | 755                                                                                | 0                                                                                   | 521                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1863                                                                              | 1583                                                                              | 0                                                                                 | 1695                                                                              | 1583                                                                              | 1721                                                                               | 0                                                                                   | 1393                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Q Serve(g_s), s              | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 11.9                                                                              | 20.5                                                                              | 20.6                                                                               | 0.0                                                                                 | 16.8                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 11.9                                                                              | 20.5                                                                              | 20.6                                                                               | 0.0                                                                                 | 16.8                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 1.00                                                                              | 0.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 3393                                                                              | 961                                                                               | 0                                                                                 | 3087                                                                              | 961                                                                               | 922                                                                                | 0                                                                                   | 747                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| V/C Ratio(X)                 | 0.00                                                                              | 0.31                                                                              | 0.00                                                                              | 0.00                                                                              | 0.38                                                                              | 0.56                                                                              | 0.82                                                                               | 0.00                                                                                | 0.70                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 3393                                                                              | 961                                                                               | 0                                                                                 | 3087                                                                              | 961                                                                               | 1167                                                                               | 0                                                                                   | 945                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| HCM Platoon Ratio            | 1.00                                                                              | 1.67                                                                              | 1.67                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Upstream Filter(I)           | 0.00                                                                              | 0.68                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 10.1                                                                              | 11.7                                                                              | 34.3                                                                               | 0.0                                                                                 | 33.0                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.2                                                                               | 0.0                                                                               | 0.0                                                                               | 0.4                                                                               | 2.4                                                                               | 3.8                                                                                | 0.0                                                                                 | 1.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 0.1                                                                               | 0.0                                                                               | 0.0                                                                               | 5.6                                                                               | 9.5                                                                               | 10.2                                                                               | 0.0                                                                                 | 6.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 0.2                                                                               | 0.0                                                                               | 0.0                                                                               | 10.4                                                                              | 14.1                                                                              | 38.1                                                                               | 0.0                                                                                 | 34.6                                                                                |                                                                                     |                                                                                     |                                                                                     |
| LnGrp LOS                    |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 | B                                                                                 | D                                                                                  |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1053                                                                              |                                                                                   |                                                                                   | 1724                                                                              |                                                                                   |                                                                                    | 1276                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 0.2                                                                               |                                                                                   |                                                                                   | 11.6                                                                              |                                                                                   |                                                                                    | 36.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 67.1                                                                              |                                                                                   |                                                                                   |                                                                                   | 67.1                                                                              |                                                                                    | 32.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 6.4                                                                               |                                                                                   |                                                                                   |                                                                                   | 6.4                                                                               |                                                                                    | 6.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 53.6                                                                              |                                                                                   |                                                                                   |                                                                                   | 53.6                                                                              |                                                                                    | 33.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 2.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 22.5                                                                              |                                                                                    | 22.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 31.9                                                                              |                                                                                   |                                                                                   |                                                                                   | 22.7                                                                              |                                                                                    | 4.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 16.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# HCM 2010 Signalized Intersection Summary

## 7: Bernardo Center Dr & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |                                                                                   |   |  |                                                                                     |  |  |  |
| Traffic Volume (veh/h)       | 280                                                                               | 730                                                                               | 370                                                                               | 150                                                                               | 760                                                                               | 170                                                                               | 460                                                                                | 520                                                                                 | 280                                                                                 | 200                                                                                 | 310                                                                                 | 120                                                                                 |
| Future Volume (veh/h)        | 280                                                                               | 730                                                                               | 370                                                                               | 150                                                                               | 760                                                                               | 170                                                                               | 460                                                                                | 520                                                                                 | 280                                                                                 | 200                                                                                 | 310                                                                                 | 120                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.98                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h         | 295                                                                               | 773                                                                               | 386                                                                               | 158                                                                               | 800                                                                               | 179                                                                               | 484                                                                                | 547                                                                                 | 295                                                                                 | 211                                                                                 | 326                                                                                 | 126                                                                                 |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 | 1                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                  | 2                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                               | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 355                                                                               | 1314                                                                              | 552                                                                               | 218                                                                               | 906                                                                               | 203                                                                               | 542                                                                                | 694                                                                                 | 373                                                                                 | 277                                                                                 | 833                                                                                 | 523                                                                                 |
| Arrive On Green              | 0.10                                                                              | 0.35                                                                              | 0.35                                                                              | 0.06                                                                              | 0.32                                                                              | 0.32                                                                              | 0.16                                                                               | 0.31                                                                                | 0.31                                                                                | 0.08                                                                                | 0.24                                                                                | 0.24                                                                                |
| Sat Flow, veh/h              | 3548                                                                              | 3725                                                                              | 1563                                                                              | 3442                                                                              | 2867                                                                              | 642                                                                               | 3442                                                                               | 2221                                                                                | 1196                                                                                | 3442                                                                                | 3539                                                                                | 1550                                                                                |
| Grp Volume(v), veh/h         | 295                                                                               | 773                                                                               | 386                                                                               | 158                                                                               | 494                                                                               | 485                                                                               | 484                                                                                | 436                                                                                 | 406                                                                                 | 211                                                                                 | 326                                                                                 | 126                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1863                                                                              | 1563                                                                              | 1721                                                                              | 1770                                                                              | 1739                                                                              | 1721                                                                               | 1770                                                                                | 1648                                                                                | 1721                                                                                | 1770                                                                                | 1550                                                                                |
| Q Serve(g_s), s              | 8.9                                                                               | 18.5                                                                              | 23.2                                                                              | 4.9                                                                               | 29.0                                                                              | 29.0                                                                              | 15.1                                                                               | 24.6                                                                                | 24.6                                                                                | 6.6                                                                                 | 8.5                                                                                 | 6.4                                                                                 |
| Cycle Q Clear(g_c), s        | 8.9                                                                               | 18.5                                                                              | 23.2                                                                              | 4.9                                                                               | 29.0                                                                              | 29.0                                                                              | 15.1                                                                               | 24.6                                                                                | 24.6                                                                                | 6.6                                                                                 | 8.5                                                                                 | 6.4                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.37                                                                              | 1.00                                                                               |                                                                                     | 0.73                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 355                                                                               | 1314                                                                              | 552                                                                               | 218                                                                               | 559                                                                               | 550                                                                               | 542                                                                                | 553                                                                                 | 514                                                                                 | 277                                                                                 | 833                                                                                 | 523                                                                                 |
| V/C Ratio(X)                 | 0.83                                                                              | 0.59                                                                              | 0.70                                                                              | 0.72                                                                              | 0.88                                                                              | 0.88                                                                              | 0.89                                                                               | 0.79                                                                                | 0.79                                                                                | 0.76                                                                                | 0.39                                                                                | 0.24                                                                                |
| Avail Cap(c_a), veh/h        | 363                                                                               | 1314                                                                              | 552                                                                               | 258                                                                               | 582                                                                               | 572                                                                               | 560                                                                                | 733                                                                                 | 682                                                                                 | 412                                                                                 | 1294                                                                                | 725                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 48.3                                                                              | 28.9                                                                              | 30.4                                                                              | 50.3                                                                              | 35.5                                                                              | 35.5                                                                              | 45.2                                                                               | 34.3                                                                                | 34.3                                                                                | 49.3                                                                                | 35.2                                                                                | 26.3                                                                                |
| Incr Delay (d2), s/veh       | 14.7                                                                              | 0.7                                                                               | 3.9                                                                               | 8.0                                                                               | 14.5                                                                              | 14.7                                                                              | 16.2                                                                               | 4.2                                                                                 | 4.6                                                                                 | 4.6                                                                                 | 0.3                                                                                 | 0.2                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 5.1                                                                               | 9.7                                                                               | 10.6                                                                              | 2.6                                                                               | 16.4                                                                              | 16.1                                                                              | 8.4                                                                                | 12.6                                                                                | 11.8                                                                                | 3.3                                                                                 | 4.2                                                                                 | 2.8                                                                                 |
| LnGrp Delay(d),s/veh         | 63.0                                                                              | 29.6                                                                              | 34.3                                                                              | 58.3                                                                              | 50.0                                                                              | 50.2                                                                              | 61.4                                                                               | 38.6                                                                                | 38.9                                                                                | 53.9                                                                                | 35.5                                                                                | 26.5                                                                                |
| LnGrp LOS                    | E                                                                                 | C                                                                                 | C                                                                                 | E                                                                                 | D                                                                                 | D                                                                                 | E                                                                                  | D                                                                                   | D                                                                                   | D                                                                                   | D                                                                                   | C                                                                                   |
| Approach Vol, veh/h          | 1454                                                                              |                                                                                   |                                                                                   |                                                                                   | 1137                                                                              |                                                                                   |                                                                                    |                                                                                     | 1326                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 37.6                                                                              |                                                                                   |                                                                                   |                                                                                   | 51.3                                                                              |                                                                                   |                                                                                    |                                                                                     | 47.0                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 | D                                                                                 |                                                                                   |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 11.3                                                                              | 44.8                                                                              | 21.6                                                                              | 31.6                                                                              | 15.4                                                                              | 40.8                                                                              | 13.2                                                                               | 40.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.4                                                                               | 6.2                                                                               | 4.4                                                                               | 5.9                                                                               | 4.4                                                                               | * 6.2                                                                             | 4.4                                                                                | * 5.9                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 8.2                                                                               | 38.1                                                                              | 17.8                                                                              | 40.0                                                                              | 11.2                                                                              | * 36                                                                              | 13.1                                                                               | * 45                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 6.9                                                                               | 25.2                                                                              | 17.1                                                                              | 10.5                                                                              | 10.9                                                                              | 31.0                                                                              | 8.6                                                                                | 26.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 9.3                                                                               | 0.2                                                                               | 8.9                                                                               | 0.0                                                                               | 3.6                                                                               | 0.3                                                                                | 7.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          | 44.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 8: West Bernardo Dr & Duenda Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |                                                                                     |  |  |                                                                                     |
| Traffic Volume (veh/h)       | 30                                                                                | 140                                                                               | 140                                                                               | 90                                                                                | 90                                                                                | 80                                                                                | 70                                                                                 | 170                                                                                 | 110                                                                                 | 130                                                                                 | 230                                                                                 | 20                                                                                  |
| Future Volume (veh/h)        | 30                                                                                | 140                                                                               | 140                                                                               | 90                                                                                | 90                                                                                | 80                                                                                | 70                                                                                 | 170                                                                                 | 110                                                                                 | 130                                                                                 | 230                                                                                 | 20                                                                                  |
| Number                       | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                  | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.98                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.98                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 33                                                                                | 152                                                                               | 152                                                                               | 98                                                                                | 98                                                                                | 87                                                                                | 76                                                                                 | 185                                                                                 | 120                                                                                 | 141                                                                                 | 250                                                                                 | 22                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                  | 2                                                                                   | 0                                                                                   | 1                                                                                   | 2                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 413                                                                               | 197                                                                               | 197                                                                               | 186                                                                               | 195                                                                               | 166                                                                               | 97                                                                                 | 366                                                                                 | 226                                                                                 | 183                                                                                 | 733                                                                                 | 64                                                                                  |
| Arrive On Green              | 0.23                                                                              | 0.23                                                                              | 0.23                                                                              | 0.10                                                                              | 0.10                                                                              | 0.10                                                                              | 0.05                                                                               | 0.17                                                                                | 0.17                                                                                | 0.10                                                                                | 0.22                                                                                | 0.22                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 848                                                                               | 848                                                                               | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                               | 2105                                                                                | 1299                                                                                | 1774                                                                                | 3287                                                                                | 287                                                                                 |
| Grp Volume(v), veh/h         | 33                                                                                | 0                                                                                 | 304                                                                               | 98                                                                                | 98                                                                                | 87                                                                                | 76                                                                                 | 154                                                                                 | 151                                                                                 | 141                                                                                 | 134                                                                                 | 138                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 0                                                                                 | 1696                                                                              | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                               | 1770                                                                                | 1634                                                                                | 1774                                                                                | 1770                                                                                | 1805                                                                                |
| Q Serve(g_s), s              | 0.8                                                                               | 0.0                                                                               | 8.7                                                                               | 2.7                                                                               | 2.6                                                                               | 2.7                                                                               | 2.2                                                                                | 4.1                                                                                 | 4.4                                                                                 | 4.0                                                                                 | 3.3                                                                                 | 3.4                                                                                 |
| Cycle Q Clear(g_c), s        | 0.8                                                                               | 0.0                                                                               | 8.7                                                                               | 2.7                                                                               | 2.6                                                                               | 2.7                                                                               | 2.2                                                                                | 4.1                                                                                 | 4.4                                                                                 | 4.0                                                                                 | 3.3                                                                                 | 3.4                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.50                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.79                                                                                | 1.00                                                                                |                                                                                     | 0.16                                                                                |
| Lane Grp Cap(c), veh/h       | 413                                                                               | 0                                                                                 | 395                                                                               | 186                                                                               | 195                                                                               | 166                                                                               | 97                                                                                 | 308                                                                                 | 284                                                                                 | 183                                                                                 | 395                                                                                 | 402                                                                                 |
| V/C Ratio(X)                 | 0.08                                                                              | 0.00                                                                              | 0.77                                                                              | 0.53                                                                              | 0.50                                                                              | 0.52                                                                              | 0.79                                                                               | 0.50                                                                                | 0.53                                                                                | 0.77                                                                                | 0.34                                                                                | 0.34                                                                                |
| Avail Cap(c_a), veh/h        | 683                                                                               | 0                                                                                 | 653                                                                               | 615                                                                               | 646                                                                               | 549                                                                               | 307                                                                                | 681                                                                                 | 629                                                                                 | 410                                                                                 | 784                                                                                 | 799                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 15.6                                                                              | 0.0                                                                               | 18.6                                                                              | 22.0                                                                              | 22.0                                                                              | 22.0                                                                              | 24.3                                                                               | 19.4                                                                                | 19.5                                                                                | 22.7                                                                                | 17.0                                                                                | 17.0                                                                                |
| Incr Delay (d2), s/veh       | 0.1                                                                               | 0.0                                                                               | 3.2                                                                               | 2.3                                                                               | 2.0                                                                               | 2.5                                                                               | 13.0                                                                               | 1.3                                                                                 | 1.5                                                                                 | 6.6                                                                                 | 0.5                                                                                 | 0.5                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.4                                                                               | 0.0                                                                               | 4.4                                                                               | 1.5                                                                               | 1.4                                                                               | 1.3                                                                               | 1.4                                                                                | 2.1                                                                                 | 2.1                                                                                 | 2.3                                                                                 | 1.7                                                                                 | 1.7                                                                                 |
| LnGrp Delay(d),s/veh         | 15.7                                                                              | 0.0                                                                               | 21.8                                                                              | 24.3                                                                              | 23.9                                                                              | 24.6                                                                              | 37.3                                                                               | 20.7                                                                                | 21.1                                                                                | 29.3                                                                                | 17.5                                                                                | 17.5                                                                                |
| LnGrp LOS                    | B                                                                                 |                                                                                   | C                                                                                 | C                                                                                 | C                                                                                 | C                                                                                 | D                                                                                  | C                                                                                   | C                                                                                   | C                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 337                                                                               |                                                                                   |                                                                                   | 283                                                                               |                                                                                   |                                                                                    | 381                                                                                 |                                                                                     |                                                                                     | 413                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 21.2                                                                              |                                                                                   |                                                                                   | 24.3                                                                              |                                                                                   |                                                                                    | 24.1                                                                                |                                                                                     |                                                                                     | 21.5                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 10.4                                                                              | 14.0                                                                              |                                                                                   | 17.1                                                                              | 7.8                                                                               | 16.6                                                                              |                                                                                    | 10.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |                                                                                    | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 12.0                                                                              | 20.0                                                                              |                                                                                   | 20.0                                                                              | 9.0                                                                               | 23.0                                                                              |                                                                                    | 18.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 6.0                                                                               | 6.4                                                                               |                                                                                   | 10.7                                                                              | 4.2                                                                               | 5.4                                                                               |                                                                                    | 4.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.2                                                                               | 2.7                                                                               |                                                                                   | 1.4                                                                               | 0.1                                                                               | 3.0                                                                               |                                                                                    | 0.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 22.7                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 9: West Bernardo Dr & Via Del Campo

3/24/2016

|                              |  |  |  |  |  |  |   |   |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|---|
| Movement                     | EBL                                                                               | EBT                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                               |   |   |
| Lane Configurations          |  |  |  |                                                                                   |  |  |   |   |
| Traffic Volume (veh/h)       | 60                                                                                | 540                                                                               | 580                                                                               | 50                                                                                | 200                                                                               | 410                                                                               |   |   |
| Future Volume (veh/h)        | 60                                                                                | 540                                                                               | 580                                                                               | 50                                                                                | 200                                                                               | 410                                                                               |   |   |
| Number                       | 5                                                                                 | 2                                                                                 | 6                                                                                 | 16                                                                                | 7                                                                                 | 14                                                                                |   |   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |   |   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              |   |   |
| Adj Flow Rate, veh/h         | 65                                                                                | 587                                                                               | 630                                                                               | 54                                                                                | 217                                                                               | 446                                                                               |   |   |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 |   |   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |   |   |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |   |
| Cap, veh/h                   | 84                                                                                | 2020                                                                              | 1563                                                                              | 134                                                                               | 557                                                                               | 497                                                                               |   |   |
| Arrive On Green              | 0.05                                                                              | 0.57                                                                              | 0.47                                                                              | 0.47                                                                              | 0.31                                                                              | 0.31                                                                              |   |   |
| Sat Flow, veh/h              | 1774                                                                              | 3632                                                                              | 3393                                                                              | 282                                                                               | 1774                                                                              | 1583                                                                              |   |   |
| Grp Volume(v), veh/h         | 65                                                                                | 587                                                                               | 337                                                                               | 347                                                                               | 217                                                                               | 446                                                                               |   |   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1770                                                                              | 1813                                                                              | 1774                                                                              | 1583                                                                              |   |   |
| Q Serve(g_s), s              | 3.2                                                                               | 7.6                                                                               | 11.0                                                                              | 11.0                                                                              | 8.5                                                                               | 23.8                                                                              |   |   |
| Cycle Q Clear(g_c), s        | 3.2                                                                               | 7.6                                                                               | 11.0                                                                              | 11.0                                                                              | 8.5                                                                               | 23.8                                                                              |   |   |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   | 0.16                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Lane Grp Cap(c), veh/h       | 84                                                                                | 2020                                                                              | 838                                                                               | 858                                                                               | 557                                                                               | 497                                                                               |   |   |
| V/C Ratio(X)                 | 0.77                                                                              | 0.29                                                                              | 0.40                                                                              | 0.40                                                                              | 0.39                                                                              | 0.90                                                                              |   |   |
| Avail Cap(c_a), veh/h        | 233                                                                               | 2020                                                                              | 838                                                                               | 858                                                                               | 788                                                                               | 703                                                                               |   |   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Uniform Delay (d), s/veh     | 41.7                                                                              | 9.8                                                                               | 15.2                                                                              | 15.2                                                                              | 23.7                                                                              | 29.0                                                                              |   |   |
| Incr Delay (d2), s/veh       | 13.9                                                                              | 0.4                                                                               | 1.4                                                                               | 1.4                                                                               | 0.4                                                                               | 10.9                                                                              |   |   |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |   |
| %ile BackOfQ(50%),veh/ln     | 1.9                                                                               | 3.8                                                                               | 5.7                                                                               | 5.8                                                                               | 4.2                                                                               | 19.9                                                                              |   |   |
| LnGrp Delay(d),s/veh         | 55.6                                                                              | 10.1                                                                              | 16.6                                                                              | 16.6                                                                              | 24.2                                                                              | 39.9                                                                              |   |   |
| LnGrp LOS                    | E                                                                                 | B                                                                                 | B                                                                                 | B                                                                                 | C                                                                                 | D                                                                                 |   |   |
| Approach Vol, veh/h          |                                                                                   | 652                                                                               | 684                                                                               |                                                                                   | 663                                                                               |                                                                                   |   |   |
| Approach Delay, s/veh        |                                                                                   | 14.7                                                                              | 16.6                                                                              |                                                                                   | 34.7                                                                              |                                                                                   |   |   |
| Approach LOS                 |                                                                                   | B                                                                                 | B                                                                                 |                                                                                   | C                                                                                 |                                                                                   |   |   |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8 |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |   |   |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 56.0                                                                              |                                                                                   | 32.5                                                                              | 8.6                                                                               | 47.4                                                                              |   |   |
| Change Period (Y+Rc), s      |                                                                                   | 5.5                                                                               |                                                                                   | * 4.7                                                                             | 4.4                                                                               | 5.5                                                                               |   |   |
| Max Green Setting (Gmax), s  |                                                                                   | 50.5                                                                              |                                                                                   | * 39                                                                              | 11.6                                                                              | 34.5                                                                              |   |   |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 9.6                                                                               |                                                                                   | 25.8                                                                              | 5.2                                                                               | 13.0                                                                              |   |   |
| Green Ext Time (p_c), s      |                                                                                   | 9.8                                                                               |                                                                                   | 2.0                                                                               | 0.1                                                                               | 8.1                                                                               |   |   |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 22.0                                                                              |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |   |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |

# HCM 2010 Signalized Intersection Summary

## 10: Bernardo Center Dr & West Bernardo Dr

3/24/2016

|                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|
|                              |  |  |  |  |  |  |  |      |
| Movement                     | EBL                                                                               | EBT                                                                               | WBU                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                                 |      |
| Lane Configurations          |  |  |  |  |  |  |  |      |
| Traffic Volume (veh/h)       | 490                                                                               | 500                                                                               | 0                                                                                 | 480                                                                               | 470                                                                               | 420                                                                               | 570                                                                                 |      |
| Future Volume (veh/h)        | 490                                                                               | 500                                                                               | 0                                                                                 | 480                                                                               | 470                                                                               | 420                                                                               | 570                                                                                 |      |
| Number                       | 1                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 12                                                                                | 3                                                                                 | 18                                                                                  |      |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   |      |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              |                                                                                   | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                                |      |
| Adj Flow Rate, veh/h         | 521                                                                               | 532                                                                               |                                                                                   | 511                                                                               | 500                                                                               | 447                                                                               | 606                                                                                 |      |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                   |      |
| Peak Hour Factor             | 0.94                                                                              | 0.94                                                                              |                                                                                   | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                                |      |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   |      |
| Cap, veh/h                   | 646                                                                               | 1835                                                                              |                                                                                   | 965                                                                               | 1734                                                                              | 621                                                                               | 851                                                                                 |      |
| Arrive On Green              | 0.19                                                                              | 0.52                                                                              |                                                                                   | 0.27                                                                              | 0.27                                                                              | 0.35                                                                              | 0.35                                                                                |      |
| Sat Flow, veh/h              | 3442                                                                              | 3632                                                                              |                                                                                   | 3632                                                                              | 2782                                                                              | 1774                                                                              | 1583                                                                                |      |
| Grp Volume(v), veh/h         | 521                                                                               | 532                                                                               |                                                                                   | 511                                                                               | 500                                                                               | 447                                                                               | 606                                                                                 |      |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1770                                                                              |                                                                                   | 1770                                                                              | 1391                                                                              | 1774                                                                              | 1583                                                                                |      |
| Q Serve(g_s), s              | 10.9                                                                              | 6.4                                                                               |                                                                                   | 9.3                                                                               | 6.2                                                                               | 16.5                                                                              | 21.6                                                                                |      |
| Cycle Q Clear(g_c), s        | 10.9                                                                              | 6.4                                                                               |                                                                                   | 9.3                                                                               | 6.2                                                                               | 16.5                                                                              | 21.6                                                                                |      |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Lane Grp Cap(c), veh/h       | 646                                                                               | 1835                                                                              |                                                                                   | 965                                                                               | 1734                                                                              | 621                                                                               | 851                                                                                 |      |
| V/C Ratio(X)                 | 0.81                                                                              | 0.29                                                                              |                                                                                   | 0.53                                                                              | 0.29                                                                              | 0.72                                                                              | 0.71                                                                                |      |
| Avail Cap(c_a), veh/h        | 940                                                                               | 2333                                                                              |                                                                                   | 1526                                                                              | 2175                                                                              | 767                                                                               | 982                                                                                 |      |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Uniform Delay (d), s/veh     | 29.3                                                                              | 10.3                                                                              |                                                                                   | 23.3                                                                              | 6.5                                                                               | 21.3                                                                              | 13.0                                                                                |      |
| Incr Delay (d2), s/veh       | 3.4                                                                               | 0.1                                                                               |                                                                                   | 0.5                                                                               | 0.1                                                                               | 2.5                                                                               | 2.1                                                                                 |      |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 |      |
| %ile BackOfQ(50%),veh/ln     | 5.5                                                                               | 3.1                                                                               |                                                                                   | 4.5                                                                               | 2.4                                                                               | 8.5                                                                               | 9.7                                                                                 |      |
| LnGrp Delay(d),s/veh         | 32.7                                                                              | 10.4                                                                              |                                                                                   | 23.8                                                                              | 6.6                                                                               | 23.8                                                                              | 15.1                                                                                |      |
| LnGrp LOS                    | C                                                                                 | B                                                                                 |                                                                                   | C                                                                                 | A                                                                                 | C                                                                                 | B                                                                                   |      |
| Approach Vol, veh/h          |                                                                                   | 1053                                                                              |                                                                                   | 1011                                                                              |                                                                                   | 1053                                                                              |                                                                                     |      |
| Approach Delay, s/veh        |                                                                                   | 21.4                                                                              |                                                                                   | 15.3                                                                              |                                                                                   | 18.8                                                                              |                                                                                     |      |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   | B                                                                                 |                                                                                   | B                                                                                 |                                                                                     |      |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8    |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                     | 8    |
| Phs Duration (G+Y+Rc), s     | 18.5                                                                              | 26.1                                                                              |                                                                                   |                                                                                   |                                                                                   | 44.6                                                                              |                                                                                     | 30.8 |
| Change Period (Y+Rc), s      | 4.4                                                                               | 5.5                                                                               |                                                                                   |                                                                                   |                                                                                   | * 5.5                                                                             |                                                                                     | 4.4  |
| Max Green Setting (Gmax), s  | 20.6                                                                              | 32.5                                                                              |                                                                                   |                                                                                   |                                                                                   | * 50                                                                              |                                                                                     | 32.6 |
| Max Q Clear Time (g_c+I1), s | 12.9                                                                              | 11.3                                                                              |                                                                                   |                                                                                   |                                                                                   | 8.4                                                                               |                                                                                     | 23.6 |
| Green Ext Time (p_c), s      | 1.2                                                                               | 9.2                                                                               |                                                                                   |                                                                                   |                                                                                   | 11.5                                                                              |                                                                                     | 2.8  |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 18.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |

## **APPENDIX I**

### **PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS YEAR 2035 WITH PROJECT**

HCM 2010 Signalized Intersection Summary  
1: Camino San Bernardo & Rancho Bernardo Rd

Year 2035 + Project AM  
3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 30                                                                                | 1061                                                                              | 190                                                                               | 488                                                                               | 798                                                                               | 80                                                                                | 40                                                                                 | 10                                                                                  | 223                                                                                 | 20                                                                                  | 10                                                                                  | 10                                                                                  |
| Future Volume (veh/h)        | 30                                                                                | 1061                                                                              | 190                                                                               | 488                                                                               | 798                                                                               | 80                                                                                | 40                                                                                 | 10                                                                                  | 223                                                                                 | 20                                                                                  | 10                                                                                  | 10                                                                                  |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.98                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.98                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 33                                                                                | 1153                                                                              | 207                                                                               | 530                                                                               | 867                                                                               | 87                                                                                | 43                                                                                 | 11                                                                                  | 242                                                                                 | 22                                                                                  | 11                                                                                  | 11                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                  | 2                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 57                                                                                | 1326                                                                              | 237                                                                               | 613                                                                               | 1914                                                                              | 192                                                                               | 300                                                                                | 346                                                                                 | 305                                                                                 | 96                                                                                  | 48                                                                                  | 27                                                                                  |
| Arrive On Green              | 0.03                                                                              | 0.44                                                                              | 0.44                                                                              | 0.18                                                                              | 0.59                                                                              | 0.59                                                                              | 0.20                                                                               | 0.20                                                                                | 0.20                                                                                | 0.20                                                                                | 0.20                                                                                | 0.20                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 2993                                                                              | 535                                                                               | 3442                                                                              | 3249                                                                              | 326                                                                               | 1384                                                                               | 1770                                                                                | 1558                                                                                | 166                                                                                 | 244                                                                                 | 136                                                                                 |
| Grp Volume(v), veh/h         | 33                                                                                | 679                                                                               | 681                                                                               | 530                                                                               | 472                                                                               | 482                                                                               | 43                                                                                 | 11                                                                                  | 242                                                                                 | 44                                                                                  | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1758                                                                              | 1721                                                                              | 1770                                                                              | 1805                                                                              | 1384                                                                               | 1770                                                                                | 1558                                                                                | 546                                                                                 | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 1.6                                                                               | 29.4                                                                              | 29.8                                                                              | 12.7                                                                              | 12.7                                                                              | 12.7                                                                              | 0.0                                                                                | 0.4                                                                                 | 12.5                                                                                | 0.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 1.6                                                                               | 29.4                                                                              | 29.8                                                                              | 12.7                                                                              | 12.7                                                                              | 12.7                                                                              | 3.0                                                                                | 0.4                                                                                 | 12.5                                                                                | 12.9                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.30                                                                              | 1.00                                                                              |                                                                                   | 0.18                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 0.50                                                                                |                                                                                     | 0.25                                                                                |
| Lane Grp Cap(c), veh/h       | 57                                                                                | 784                                                                               | 779                                                                               | 613                                                                               | 1043                                                                              | 1064                                                                              | 300                                                                                | 346                                                                                 | 305                                                                                 | 171                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.58                                                                              | 0.87                                                                              | 0.87                                                                              | 0.86                                                                              | 0.45                                                                              | 0.45                                                                              | 0.14                                                                               | 0.03                                                                                | 0.79                                                                                | 0.26                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 128                                                                               | 816                                                                               | 810                                                                               | 671                                                                               | 1043                                                                              | 1064                                                                              | 504                                                                                | 606                                                                                 | 534                                                                                 | 370                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 40.4                                                                              | 21.3                                                                              | 21.4                                                                              | 33.8                                                                              | 9.7                                                                               | 9.7                                                                               | 28.6                                                                               | 27.5                                                                                | 32.4                                                                                | 28.7                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 9.2                                                                               | 9.5                                                                               | 10.2                                                                              | 10.7                                                                              | 0.3                                                                               | 0.3                                                                               | 0.2                                                                                | 0.0                                                                                 | 4.7                                                                                 | 0.8                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.9                                                                               | 16.2                                                                              | 16.6                                                                              | 6.9                                                                               | 6.3                                                                               | 6.4                                                                               | 0.9                                                                                | 0.2                                                                                 | 5.8                                                                                 | 0.9                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 49.6                                                                              | 30.8                                                                              | 31.6                                                                              | 44.5                                                                              | 10.0                                                                              | 10.0                                                                              | 28.8                                                                               | 27.6                                                                                | 37.1                                                                                | 29.5                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | B                                                                                 | B                                                                                 | C                                                                                  | C                                                                                   | D                                                                                   | C                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          | 1393                                                                              |                                                                                   |                                                                                   |                                                                                   | 1484                                                                              |                                                                                   |                                                                                    |                                                                                     | 296                                                                                 |                                                                                     | 44                                                                                  |                                                                                     |
| Approach Delay, s/veh        | 31.6                                                                              |                                                                                   |                                                                                   |                                                                                   | 22.3                                                                              |                                                                                   |                                                                                    |                                                                                     | 35.5                                                                                |                                                                                     | 29.5                                                                                |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    |                                                                                     | D                                                                                   |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 19.6                                                                              | 43.5                                                                              |                                                                                   | 21.6                                                                              | 7.2                                                                               | 55.9                                                                              |                                                                                    | 21.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 6.0                                                                               |                                                                                   | 5.0                                                                               | 4.5                                                                               | 6.0                                                                               |                                                                                    | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 16.5                                                                              | 39.0                                                                              |                                                                                   | 29.0                                                                              | 6.1                                                                               | 49.4                                                                              |                                                                                    | 29.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 14.7                                                                              | 31.8                                                                              |                                                                                   | 14.9                                                                              | 3.6                                                                               | 14.7                                                                              |                                                                                    | 14.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.4                                                                               | 5.7                                                                               |                                                                                   | 1.5                                                                               | 0.0                                                                               | 19.8                                                                              |                                                                                    | 1.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          | 27.7                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 2: Via Del Campo & Rancho Bernardo Rd

Year 2035 + Project AM

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 10                                                                                | 1114                                                                              | 390                                                                               | 713                                                                               | 1356                                                                              | 10                                                                                | 80                                                                                 | 10                                                                                  | 77                                                                                  | 10                                                                                  | 10                                                                                  | 10                                                                                  |
| Future Volume (veh/h)        | 10                                                                                | 1114                                                                              | 390                                                                               | 713                                                                               | 1356                                                                              | 10                                                                                | 80                                                                                 | 10                                                                                  | 77                                                                                  | 10                                                                                  | 10                                                                                  | 10                                                                                  |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.98                                                                              | 1.00                                                                              |                                                                                   | 0.98                                                                              | 1.00                                                                               |                                                                                     | 0.99                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1900                                                                               | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 11                                                                                | 1211                                                                              | 424                                                                               | 775                                                                               | 1474                                                                              | 11                                                                                | 87                                                                                 | 11                                                                                  | 84                                                                                  | 11                                                                                  | 11                                                                                  | 11                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 0                                                                                  | 1                                                                                   | 1                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 18                                                                                | 1040                                                                              | 353                                                                               | 611                                                                               | 2656                                                                              | 20                                                                                | 157                                                                                | 17                                                                                  | 222                                                                                 | 45                                                                                  | 44                                                                                  | 28                                                                                  |
| Arrive On Green              | 0.01                                                                              | 0.40                                                                              | 0.40                                                                              | 0.34                                                                              | 0.74                                                                              | 0.74                                                                              | 0.14                                                                               | 0.14                                                                                | 0.14                                                                                | 0.14                                                                                | 0.14                                                                                | 0.14                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 2579                                                                              | 875                                                                               | 1774                                                                              | 3600                                                                              | 27                                                                                | 765                                                                                | 120                                                                                 | 1562                                                                                | 80                                                                                  | 309                                                                                 | 195                                                                                 |
| Grp Volume(v), veh/h         | 11                                                                                | 819                                                                               | 816                                                                               | 775                                                                               | 724                                                                               | 761                                                                               | 98                                                                                 | 0                                                                                   | 84                                                                                  | 33                                                                                  | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1684                                                                              | 1774                                                                              | 1770                                                                              | 1857                                                                              | 885                                                                                | 0                                                                                   | 1562                                                                                | 584                                                                                 | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.9                                                                               | 56.9                                                                              | 56.9                                                                              | 48.6                                                                              | 25.6                                                                              | 25.7                                                                              | 0.0                                                                                | 0.0                                                                                 | 6.9                                                                                 | 0.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.9                                                                               | 56.9                                                                              | 56.9                                                                              | 48.6                                                                              | 25.6                                                                              | 25.7                                                                              | 17.0                                                                               | 0.0                                                                                 | 6.9                                                                                 | 17.3                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.52                                                                              | 1.00                                                                              |                                                                                   | 0.01                                                                              | 0.89                                                                               |                                                                                     | 1.00                                                                                | 0.33                                                                                |                                                                                     | 0.33                                                                                |
| Lane Grp Cap(c), veh/h       | 18                                                                                | 714                                                                               | 679                                                                               | 611                                                                               | 1306                                                                              | 1370                                                                              | 174                                                                                | 0                                                                                   | 222                                                                                 | 117                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.62                                                                              | 1.15                                                                              | 1.20                                                                              | 1.27                                                                              | 0.55                                                                              | 0.56                                                                              | 0.56                                                                               | 0.00                                                                                | 0.38                                                                                | 0.28                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 50                                                                                | 714                                                                               | 679                                                                               | 611                                                                               | 1306                                                                              | 1370                                                                              | 264                                                                                | 0                                                                                   | 321                                                                                 | 218                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 69.6                                                                              | 42.1                                                                              | 42.1                                                                              | 46.2                                                                              | 8.2                                                                               | 8.2                                                                               | 59.0                                                                               | 0.0                                                                                 | 54.8                                                                                | 53.5                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 31.0                                                                              | 82.3                                                                              | 104.2                                                                             | 133.3                                                                             | 0.5                                                                               | 0.5                                                                               | 2.8                                                                                | 0.0                                                                                 | 1.1                                                                                 | 1.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.6                                                                               | 44.1                                                                              | 46.1                                                                              | 46.4                                                                              | 12.5                                                                              | 13.1                                                                              | 3.9                                                                                | 0.0                                                                                 | 3.0                                                                                 | 1.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 100.6                                                                             | 124.4                                                                             | 146.3                                                                             | 179.6                                                                             | 8.7                                                                               | 8.7                                                                               | 61.8                                                                               | 0.0                                                                                 | 55.9                                                                                | 54.8                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | F                                                                                 | F                                                                                 | F                                                                                 | F                                                                                 | A                                                                                 | A                                                                                 | E                                                                                  |                                                                                     | E                                                                                   | D                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1646                                                                              |                                                                                   |                                                                                   | 2260                                                                              |                                                                                   |                                                                                    | 182                                                                                 |                                                                                     |                                                                                     | 33                                                                                  |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 135.1                                                                             |                                                                                   |                                                                                   | 67.3                                                                              |                                                                                   |                                                                                    | 59.1                                                                                |                                                                                     |                                                                                     | 54.8                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                    | E                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 53.0                                                                              | 62.8                                                                              |                                                                                   | 25.3                                                                              | 5.8                                                                               | 110.0                                                                             |                                                                                    | 25.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.4                                                                               | 5.9                                                                               |                                                                                   | * 5.2                                                                             | 4.4                                                                               | * 5.9                                                                             |                                                                                    | 5.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 48.6                                                                              | 56.9                                                                              |                                                                                   | * 29                                                                              | 4.0                                                                               | * 1E2                                                                             |                                                                                    | 29.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 50.6                                                                              | 58.9                                                                              |                                                                                   | 19.3                                                                              | 2.9                                                                               | 27.7                                                                              |                                                                                    | 19.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.7                                                                               | 0.0                                                                               | 49.1                                                                              |                                                                                    | 0.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 93.9                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# HCM 2010 Signalized Intersection Summary

## 3: Project Dwy/Matinal Rd & Rancho Bernardo Rd

Year 2035 + Project AM

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 40                                                                                | 920                                                                               | 156                                                                               | 479                                                                               | 1770                                                                              | 20                                                                                | 39                                                                                 | 3                                                                                   | 120                                                                                 | 90                                                                                  | 13                                                                                  | 150                                                                                 |
| Future Volume (veh/h)        | 40                                                                                | 920                                                                               | 156                                                                               | 479                                                                               | 1770                                                                              | 20                                                                                | 39                                                                                 | 3                                                                                   | 120                                                                                 | 90                                                                                  | 13                                                                                  | 150                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.99                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 43                                                                                | 1000                                                                              | 170                                                                               | 521                                                                               | 1924                                                                              | 22                                                                                | 42                                                                                 | 3                                                                                   | 130                                                                                 | 98                                                                                  | 14                                                                                  | 163                                                                                 |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                  | 1                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 54                                                                                | 933                                                                               | 158                                                                               | 467                                                                               | 2048                                                                              | 23                                                                                | 267                                                                                | 9                                                                                   | 388                                                                                 | 143                                                                                 | 34                                                                                  | 185                                                                                 |
| Arrive On Green              | 0.03                                                                              | 0.31                                                                              | 0.31                                                                              | 0.26                                                                              | 0.57                                                                              | 0.57                                                                              | 0.25                                                                               | 0.25                                                                                | 0.25                                                                                | 0.25                                                                                | 0.25                                                                                | 0.25                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 3028                                                                              | 514                                                                               | 1774                                                                              | 3584                                                                              | 41                                                                                | 1203                                                                               | 36                                                                                  | 1553                                                                                | 374                                                                                 | 135                                                                                 | 741                                                                                 |
| Grp Volume(v), veh/h         | 43                                                                                | 584                                                                               | 586                                                                               | 521                                                                               | 948                                                                               | 998                                                                               | 42                                                                                 | 0                                                                                   | 133                                                                                 | 275                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1772                                                                              | 1774                                                                              | 1770                                                                              | 1856                                                                              | 1203                                                                               | 0                                                                                   | 1589                                                                                | 1251                                                                                | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 2.4                                                                               | 30.4                                                                              | 30.4                                                                              | 26.0                                                                              | 48.8                                                                              | 49.2                                                                              | 0.0                                                                                | 0.0                                                                                 | 6.8                                                                                 | 14.7                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 2.4                                                                               | 30.4                                                                              | 30.4                                                                              | 26.0                                                                              | 48.8                                                                              | 49.2                                                                              | 4.6                                                                                | 0.0                                                                                 | 6.8                                                                                 | 21.5                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.29                                                                              | 1.00                                                                              |                                                                                   | 0.02                                                                              | 1.00                                                                               |                                                                                     | 0.98                                                                                | 0.36                                                                                |                                                                                     | 0.59                                                                                |
| Lane Grp Cap(c), veh/h       | 54                                                                                | 545                                                                               | 546                                                                               | 467                                                                               | 1011                                                                              | 1060                                                                              | 267                                                                                | 0                                                                                   | 397                                                                                 | 362                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.79                                                                              | 1.07                                                                              | 1.07                                                                              | 1.11                                                                              | 0.94                                                                              | 0.94                                                                              | 0.16                                                                               | 0.00                                                                                | 0.33                                                                                | 0.76                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 72                                                                                | 545                                                                               | 546                                                                               | 467                                                                               | 1011                                                                              | 1060                                                                              | 315                                                                                | 0                                                                                   | 461                                                                                 | 411                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 47.5                                                                              | 34.1                                                                              | 34.1                                                                              | 36.3                                                                              | 19.5                                                                              | 19.6                                                                              | 29.5                                                                               | 0.0                                                                                 | 30.3                                                                                | 36.8                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 33.8                                                                              | 59.0                                                                              | 59.7                                                                              | 76.7                                                                              | 15.6                                                                              | 15.6                                                                              | 0.3                                                                                | 0.0                                                                                 | 0.5                                                                                 | 7.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 1.7                                                                               | 23.6                                                                              | 23.8                                                                              | 22.6                                                                              | 27.8                                                                              | 29.5                                                                              | 0.9                                                                                | 0.0                                                                                 | 3.0                                                                                 | 8.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 81.3                                                                              | 93.1                                                                              | 93.8                                                                              | 113.0                                                                             | 35.1                                                                              | 35.2                                                                              | 29.8                                                                               | 0.0                                                                                 | 30.8                                                                                | 43.9                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | F                                                                                 | F                                                                                 | F                                                                                 | F                                                                                 | D                                                                                 | D                                                                                 | C                                                                                  |                                                                                     | C                                                                                   | D                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1213                                                                              |                                                                                   |                                                                                   | 2467                                                                              |                                                                                   |                                                                                    | 175                                                                                 |                                                                                     |                                                                                     | 275                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 93.0                                                                              |                                                                                   |                                                                                   | 51.6                                                                              |                                                                                   |                                                                                    | 30.5                                                                                |                                                                                     |                                                                                     | 43.9                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 32.0                                                                              | 37.4                                                                              |                                                                                   | 29.3                                                                              | 7.0                                                                               | 62.4                                                                              |                                                                                    | 29.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 6.0                                                                               | * 7                                                                               |                                                                                   | 4.6                                                                               | 4.0                                                                               | 6.0                                                                               |                                                                                    | * 4.6                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 26.0                                                                              | * 30                                                                              |                                                                                   | 28.0                                                                              | 4.0                                                                               | 53.4                                                                              |                                                                                    | * 29                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 28.0                                                                              | 32.4                                                                              |                                                                                   | 23.5                                                                              | 4.4                                                                               | 51.2                                                                              |                                                                                    | 8.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.0                                                                               |                                                                                   | 1.2                                                                               | 0.0                                                                               | 2.0                                                                               |                                                                                    | 2.9                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 62.4                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 4: West Bernardo Dr & Rancho Bernardo Rd

Year 2035 + Project AM

3/24/2016

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 65                                                                                | 837                                                                               | 108                                                                               | 610                                                                               | 2078                                                                              | 300                                                                               | 172                                                                                 | 90                                                                                  | 180                                                                                 | 680                                                                                 | 370                                                                                 | 189                                                                                 |
| Future Volume (veh/h)        | 65                                                                                | 837                                                                               | 108                                                                               | 610                                                                               | 2078                                                                              | 300                                                                               | 172                                                                                 | 90                                                                                  | 180                                                                                 | 680                                                                                 | 370                                                                                 | 189                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                   | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                                |                                                                                     | 0.99                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 67                                                                                | 863                                                                               | 111                                                                               | 629                                                                               | 2142                                                                              | 309                                                                               | 177                                                                                 | 93                                                                                  | 186                                                                                 | 701                                                                                 | 381                                                                                 | 195                                                                                 |
| Adj No. of Lanes             | 2                                                                                 | 3                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 | 1                                                                                 | 2                                                                                   | 2                                                                                   | 1                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 111                                                                               | 1058                                                                              | 135                                                                               | 824                                                                               | 1599                                                                              | 706                                                                               | 250                                                                                 | 408                                                                                 | 559                                                                                 | 783                                                                                 | 614                                                                                 | 310                                                                                 |
| Arrive On Green              | 0.03                                                                              | 0.23                                                                              | 0.23                                                                              | 0.24                                                                              | 0.45                                                                              | 0.45                                                                              | 0.07                                                                                | 0.12                                                                                | 0.12                                                                                | 0.23                                                                                | 0.27                                                                                | 0.27                                                                                |
| Sat Flow, veh/h              | 3442                                                                              | 4565                                                                              | 585                                                                               | 3442                                                                              | 3539                                                                              | 1562                                                                              | 3442                                                                                | 3539                                                                                | 1561                                                                                | 3442                                                                                | 2276                                                                                | 1148                                                                                |
| Grp Volume(v), veh/h         | 67                                                                                | 640                                                                               | 334                                                                               | 629                                                                               | 2142                                                                              | 309                                                                               | 177                                                                                 | 93                                                                                  | 186                                                                                 | 701                                                                                 | 295                                                                                 | 281                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1695                                                                              | 1760                                                                              | 1721                                                                              | 1770                                                                              | 1562                                                                              | 1721                                                                                | 1770                                                                                | 1561                                                                                | 1721                                                                                | 1770                                                                                | 1654                                                                                |
| Q Serve(g_s), s              | 2.2                                                                               | 20.5                                                                              | 20.7                                                                              | 19.5                                                                              | 51.9                                                                              | 15.5                                                                              | 5.8                                                                                 | 2.7                                                                                 | 4.1                                                                                 | 22.7                                                                                | 16.8                                                                                | 17.2                                                                                |
| Cycle Q Clear(g_c), s        | 2.2                                                                               | 20.5                                                                              | 20.7                                                                              | 19.5                                                                              | 51.9                                                                              | 15.5                                                                              | 5.8                                                                                 | 2.7                                                                                 | 4.1                                                                                 | 22.7                                                                                | 16.8                                                                                | 17.2                                                                                |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.33                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.69                                                                                |
| Lane Grp Cap(c), veh/h       | 111                                                                               | 785                                                                               | 408                                                                               | 824                                                                               | 1599                                                                              | 706                                                                               | 250                                                                                 | 408                                                                                 | 559                                                                                 | 783                                                                                 | 478                                                                                 | 446                                                                                 |
| V/C Ratio(X)                 | 0.60                                                                              | 0.81                                                                              | 0.82                                                                              | 0.76                                                                              | 1.34                                                                              | 0.44                                                                              | 0.71                                                                                | 0.23                                                                                | 0.33                                                                                | 0.90                                                                                | 0.62                                                                                | 0.63                                                                                |
| Avail Cap(c_a), veh/h        | 120                                                                               | 909                                                                               | 472                                                                               | 824                                                                               | 1599                                                                              | 706                                                                               | 1022                                                                                | 1205                                                                                | 911                                                                                 | 902                                                                                 | 541                                                                                 | 506                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 54.8                                                                              | 41.8                                                                              | 41.9                                                                              | 40.6                                                                              | 31.5                                                                              | 21.5                                                                              | 52.1                                                                                | 46.2                                                                                | 9.8                                                                                 | 43.0                                                                                | 36.7                                                                                | 36.9                                                                                |
| Incr Delay (d2), s/veh       | 7.3                                                                               | 5.1                                                                               | 9.7                                                                               | 4.3                                                                               | 157.0                                                                             | 0.4                                                                               | 3.7                                                                                 | 0.3                                                                                 | 0.3                                                                                 | 10.5                                                                                | 1.7                                                                                 | 2.1                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 1.2                                                                               | 10.2                                                                              | 11.1                                                                              | 9.7                                                                               | 60.0                                                                              | 6.8                                                                               | 2.9                                                                                 | 1.4                                                                                 | 2.1                                                                                 | 11.9                                                                                | 8.4                                                                                 | 8.1                                                                                 |
| LnGrp Delay(d),s/veh         | 62.1                                                                              | 46.9                                                                              | 51.6                                                                              | 44.9                                                                              | 188.5                                                                             | 21.9                                                                              | 55.7                                                                                | 46.5                                                                                | 10.2                                                                                | 53.5                                                                                | 38.5                                                                                | 38.9                                                                                |
| LnGrp LOS                    | E                                                                                 | D                                                                                 | D                                                                                 | D                                                                                 | F                                                                                 | C                                                                                 | E                                                                                   | D                                                                                   | B                                                                                   | D                                                                                   | D                                                                                   | D                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 1041                                                                              |                                                                                   |                                                                                   | 3080                                                                              |                                                                                   |                                                                                     | 456                                                                                 |                                                                                     |                                                                                     | 1277                                                                                |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 49.4                                                                              |                                                                                   |                                                                                   | 142.5                                                                             |                                                                                   |                                                                                     | 35.2                                                                                |                                                                                     |                                                                                     | 46.8                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                     | D                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 33.2                                                                              | 32.5                                                                              | 12.8                                                                              | 36.4                                                                              | 8.1                                                                               | 57.6                                                                              | 30.5                                                                                | 18.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.7                                                                               | * 5.9                                                                             | 4.4                                                                               | 5.4                                                                               | 4.4                                                                               | 5.7                                                                               | 4.4                                                                                 | 5.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 24.9                                                                              | * 31                                                                              | 34.1                                                                              | 35.1                                                                              | 4.0                                                                               | 51.9                                                                              | 30.1                                                                                | 39.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 21.5                                                                              | 22.7                                                                              | 7.8                                                                               | 19.2                                                                              | 4.2                                                                               | 53.9                                                                              | 24.7                                                                                | 6.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 3.3                                                                               | 3.9                                                                               | 0.6                                                                               | 4.5                                                                               | 0.0                                                                               | 0.0                                                                               | 1.4                                                                                 | 5.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 96.7                                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

HCM 2010 Signalized Intersection Summary  
5: I-15 SB Ramps & Rancho Bernardo Rd

Year 2035 + Project AM

3/24/2016

|                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                              |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   | ↑↑↑                                                                               | ↑                                                                                 |                                                                                   | ↑↑↑                                                                               | ↑                                                                                 |                                                                                    |                                                                                     |                                                                                     | ↑↑                                                                                  |                                                                                     | ↑↑                                                                                  |
| Traffic Volume (veh/h)       | 0                                                                                 | 917                                                                               | 750                                                                               | 0                                                                                 | 1636                                                                              | 560                                                                               | 0                                                                                  | 0                                                                                   | 0                                                                                   | 760                                                                                 | 0                                                                                   | 1332                                                                                |
| Future Volume (veh/h)        | 0                                                                                 | 917                                                                               | 750                                                                               | 0                                                                                 | 1636                                                                              | 560                                                                               | 0                                                                                  | 0                                                                                   | 0                                                                                   | 760                                                                                 | 0                                                                                   | 1332                                                                                |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                |                                                                                    |                                                                                     |                                                                                     | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 0                                                                                 | 1863                                                                              | 1863                                                                              | 0                                                                                 | 1863                                                                              | 1863                                                                              |                                                                                    |                                                                                     |                                                                                     | 1863                                                                                | 0                                                                                   | 1863                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 965                                                                               | 789                                                                               | 0                                                                                 | 1722                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 800                                                                                 | 0                                                                                   | 1402                                                                                |
| Adj No. of Lanes             | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 3                                                                                 | 1                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 2                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.95                                                                              | 0.95                                                                              | 0.92                                                                              | 0.95                                                                              | 0.95                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.95                                                                                | 0.92                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %         | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 0                                                                                 | 1475                                                                              | 1254                                                                              | 0                                                                                 | 2213                                                                              | 627                                                                               |                                                                                    |                                                                                     |                                                                                     | 1649                                                                                | 0                                                                                   | 1335                                                                                |
| Arrive On Green              | 0.00                                                                              | 0.40                                                                              | 0.40                                                                              | 0.00                                                                              | 0.79                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.48                                                                                | 0.00                                                                                | 0.48                                                                                |
| Sat Flow, veh/h              | 0                                                                                 | 3725                                                                              | 3167                                                                              | 0                                                                                 | 5588                                                                              | 1583                                                                              |                                                                                    |                                                                                     |                                                                                     | 3442                                                                                | 0                                                                                   | 2787                                                                                |
| Grp Volume(v), veh/h         | 0                                                                                 | 965                                                                               | 789                                                                               | 0                                                                                 | 1722                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 800                                                                                 | 0                                                                                   | 1402                                                                                |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1863                                                                              | 1583                                                                              | 0                                                                                 | 1863                                                                              | 1583                                                                              |                                                                                    |                                                                                     |                                                                                     | 1721                                                                                | 0                                                                                   | 1393                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 21.1                                                                              | 20.0                                                                              | 0.0                                                                               | 16.7                                                                              | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 15.8                                                                                | 0.0                                                                                 | 47.9                                                                                |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 21.1                                                                              | 20.0                                                                              | 0.0                                                                               | 16.7                                                                              | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 15.8                                                                                | 0.0                                                                                 | 47.9                                                                                |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 1.00                                                                              | 0.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 1475                                                                              | 1254                                                                              | 0                                                                                 | 2213                                                                              | 627                                                                               |                                                                                    |                                                                                     |                                                                                     | 1649                                                                                | 0                                                                                   | 1335                                                                                |
| V/C Ratio(X)                 | 0.00                                                                              | 0.65                                                                              | 0.63                                                                              | 0.00                                                                              | 0.78                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.49                                                                                | 0.00                                                                                | 1.05                                                                                |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 1475                                                                              | 1254                                                                              | 0                                                                                 | 2213                                                                              | 627                                                                               |                                                                                    |                                                                                     |                                                                                     | 1649                                                                                | 0                                                                                   | 1335                                                                                |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                              | 2.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.00                                                                              | 0.57                                                                              | 0.57                                                                              | 0.00                                                                              | 0.73                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 24.6                                                                              | 24.3                                                                              | 0.0                                                                               | 8.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 17.7                                                                                | 0.0                                                                                 | 26.1                                                                                |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 1.3                                                                               | 1.4                                                                               | 0.0                                                                               | 2.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.2                                                                                 | 0.0                                                                                 | 39.0                                                                                |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 11.1                                                                              | 9.0                                                                               | 0.0                                                                               | 8.4                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 7.5                                                                                 | 0.0                                                                                 | 25.6                                                                                |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 25.9                                                                              | 25.7                                                                              | 0.0                                                                               | 10.1                                                                              | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 17.9                                                                                | 0.0                                                                                 | 65.0                                                                                |
| LnGrp LOS                    |                                                                                   | C                                                                                 | C                                                                                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     | B                                                                                   |                                                                                     | F                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 1754                                                                              |                                                                                   |                                                                                   | 1722                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 2202                                                                                |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 25.8                                                                              |                                                                                   |                                                                                   | 10.1                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 47.9                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 46.0                                                                              |                                                                                   | 54.0                                                                              |                                                                                   | 46.0                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 6.4                                                                               |                                                                                   | 6.1                                                                               |                                                                                   | 6.4                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 39.6                                                                              |                                                                                   | 47.9                                                                              |                                                                                   | 39.6                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 23.1                                                                              |                                                                                   | 49.9                                                                              |                                                                                   | 18.7                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 15.2                                                                              |                                                                                   | 0.0                                                                               |                                                                                   | 18.9                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 29.6                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 6: I-15 NB Ramps & Rancho Bernardo Rd

Year 2035 + Project AM  
3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |                                                                                   |  |  |  |                                                                                     |  |                                                                                     |                                                                                     |                                                                                     |
| Traffic Volume (veh/h)       | 0                                                                                 | 966                                                                               | 741                                                                               | 0                                                                                 | 1265                                                                              | 320                                                                               | 931                                                                                | 0                                                                                   | 510                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 0                                                                                 | 966                                                                               | 741                                                                               | 0                                                                                 | 1265                                                                              | 320                                                                               | 931                                                                                | 0                                                                                   | 510                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 0                                                                                 | 1863                                                                              | 1863                                                                              | 0                                                                                 | 1863                                                                              | 1863                                                                              | 1863                                                                               | 0                                                                                   | 1863                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Adj Flow Rate, veh/h         | 0                                                                                 | 1028                                                                              | 0                                                                                 | 0                                                                                 | 1346                                                                              | 340                                                                               | 990                                                                                | 0                                                                                   | 543                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Adj No. of Lanes             | 0                                                                                 | 3                                                                                 | 1                                                                                 | 0                                                                                 | 3                                                                                 | 1                                                                                 | 2                                                                                  | 0                                                                                   | 2                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Peak Hour Factor             | 0.92                                                                              | 0.94                                                                              | 0.94                                                                              | 0.92                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                               | 0.92                                                                                | 0.94                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Percent Heavy Veh, %         | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 0                                                                                   | 2                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Cap, veh/h                   | 0                                                                                 | 2971                                                                              | 842                                                                               | 0                                                                                 | 2704                                                                              | 842                                                                               | 1182                                                                               | 0                                                                                   | 957                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Arrive On Green              | 0.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 0.53                                                                              | 0.53                                                                              | 0.34                                                                               | 0.00                                                                                | 0.34                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Sat Flow, veh/h              | 0                                                                                 | 5588                                                                              | 1583                                                                              | 0                                                                                 | 5253                                                                              | 1583                                                                              | 3442                                                                               | 0                                                                                   | 2787                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Grp Volume(v), veh/h         | 0                                                                                 | 1028                                                                              | 0                                                                                 | 0                                                                                 | 1346                                                                              | 340                                                                               | 990                                                                                | 0                                                                                   | 543                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1863                                                                              | 1583                                                                              | 0                                                                                 | 1695                                                                              | 1583                                                                              | 1721                                                                               | 0                                                                                   | 1393                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Q Serve(g_s), s              | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 16.9                                                                              | 12.8                                                                              | 26.5                                                                               | 0.0                                                                                 | 15.9                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 16.9                                                                              | 12.8                                                                              | 26.5                                                                               | 0.0                                                                                 | 15.9                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 1.00                                                                              | 0.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 2971                                                                              | 842                                                                               | 0                                                                                 | 2704                                                                              | 842                                                                               | 1182                                                                               | 0                                                                                   | 957                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| V/C Ratio(X)                 | 0.00                                                                              | 0.35                                                                              | 0.00                                                                              | 0.00                                                                              | 0.50                                                                              | 0.40                                                                              | 0.84                                                                               | 0.00                                                                                | 0.57                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 2971                                                                              | 842                                                                               | 0                                                                                 | 2704                                                                              | 842                                                                               | 1476                                                                               | 0                                                                                   | 1195                                                                                |                                                                                     |                                                                                     |                                                                                     |
| HCM Platoon Ratio            | 1.00                                                                              | 2.00                                                                              | 2.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Upstream Filter(I)           | 0.00                                                                              | 0.72                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 14.9                                                                              | 14.0                                                                              | 30.3                                                                               | 0.0                                                                                 | 26.8                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.2                                                                               | 0.0                                                                               | 0.0                                                                               | 0.7                                                                               | 1.4                                                                               | 3.6                                                                                | 0.0                                                                                 | 0.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 0.1                                                                               | 0.0                                                                               | 0.0                                                                               | 8.0                                                                               | 5.9                                                                               | 13.1                                                                               | 0.0                                                                                 | 6.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 0.2                                                                               | 0.0                                                                               | 0.0                                                                               | 15.6                                                                              | 15.4                                                                              | 33.9                                                                               | 0.0                                                                                 | 27.3                                                                                |                                                                                     |                                                                                     |                                                                                     |
| LnGrp LOS                    |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 | B                                                                                 | C                                                                                  |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1028                                                                              |                                                                                   |                                                                                   | 1686                                                                              |                                                                                   |                                                                                    | 1533                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 0.2                                                                               |                                                                                   |                                                                                   | 15.5                                                                              |                                                                                   |                                                                                    | 31.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 59.6                                                                              |                                                                                   |                                                                                   |                                                                                   | 59.6                                                                              |                                                                                    | 40.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 6.4                                                                               |                                                                                   |                                                                                   |                                                                                   | 6.4                                                                               |                                                                                    | 6.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 44.6                                                                              |                                                                                   |                                                                                   |                                                                                   | 44.6                                                                              |                                                                                    | 42.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 2.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 18.9                                                                              |                                                                                    | 28.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 28.4                                                                              |                                                                                   |                                                                                   |                                                                                   | 19.7                                                                              |                                                                                    | 5.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 17.6                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 7: Bernardo Center Dr & Rancho Bernardo Rd

Year 2035 + Project AM

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |                                                                                   |  |  |                                                                                     |  |  |  |
| Traffic Volume (veh/h)       | 363                                                                               | 660                                                                               | 353                                                                               | 180                                                                               | 909                                                                               | 100                                                                               | 283                                                                                | 200                                                                                 | 120                                                                                 | 230                                                                                 | 310                                                                                 | 143                                                                                 |
| Future Volume (veh/h)        | 363                                                                               | 660                                                                               | 353                                                                               | 180                                                                               | 909                                                                               | 100                                                                               | 283                                                                                | 200                                                                                 | 120                                                                                 | 230                                                                                 | 310                                                                                 | 143                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.98                                                                              | 1.00                                                                               |                                                                                     | 0.99                                                                                | 1.00                                                                                |                                                                                     | 0.99                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h         | 390                                                                               | 735                                                                               | 363                                                                               | 194                                                                               | 977                                                                               | 108                                                                               | 304                                                                                | 215                                                                                 | 129                                                                                 | 247                                                                                 | 333                                                                                 | 154                                                                                 |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 | 1                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                  | 2                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                               | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 465                                                                               | 1552                                                                              | 660                                                                               | 266                                                                               | 1164                                                                              | 129                                                                               | 372                                                                                | 408                                                                                 | 235                                                                                 | 328                                                                                 | 623                                                                                 | 482                                                                                 |
| Arrive On Green              | 0.13                                                                              | 0.42                                                                              | 0.42                                                                              | 0.08                                                                              | 0.36                                                                              | 0.36                                                                              | 0.11                                                                               | 0.19                                                                                | 0.19                                                                                | 0.10                                                                                | 0.18                                                                                | 0.18                                                                                |
| Sat Flow, veh/h              | 3548                                                                              | 3725                                                                              | 1583                                                                              | 3442                                                                              | 3209                                                                              | 355                                                                               | 3442                                                                               | 2160                                                                                | 1241                                                                                | 3442                                                                                | 3539                                                                                | 1560                                                                                |
| Grp Volume(v), veh/h         | 390                                                                               | 735                                                                               | 363                                                                               | 194                                                                               | 539                                                                               | 546                                                                               | 304                                                                                | 174                                                                                 | 170                                                                                 | 247                                                                                 | 333                                                                                 | 154                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1721                                                                              | 1770                                                                              | 1794                                                                              | 1721                                                                               | 1770                                                                                | 1632                                                                                | 1721                                                                                | 1770                                                                                | 1560                                                                                |
| Q Serve(g_s), s              | 10.1                                                                              | 13.5                                                                              | 16.3                                                                              | 5.2                                                                               | 26.3                                                                              | 26.3                                                                              | 8.1                                                                                | 8.4                                                                                 | 8.9                                                                                 | 6.6                                                                                 | 8.1                                                                                 | 7.1                                                                                 |
| Cycle Q Clear(g_c), s        | 10.1                                                                              | 13.5                                                                              | 16.3                                                                              | 5.2                                                                               | 26.3                                                                              | 26.3                                                                              | 8.1                                                                                | 8.4                                                                                 | 8.9                                                                                 | 6.6                                                                                 | 8.1                                                                                 | 7.1                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.20                                                                              | 1.00                                                                               |                                                                                     | 0.76                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 465                                                                               | 1552                                                                              | 660                                                                               | 266                                                                               | 642                                                                               | 651                                                                               | 372                                                                                | 334                                                                                 | 308                                                                                 | 328                                                                                 | 623                                                                                 | 482                                                                                 |
| V/C Ratio(X)                 | 0.84                                                                              | 0.47                                                                              | 0.55                                                                              | 0.73                                                                              | 0.84                                                                              | 0.84                                                                              | 0.82                                                                               | 0.52                                                                                | 0.55                                                                                | 0.75                                                                                | 0.53                                                                                | 0.32                                                                                |
| Avail Cap(c_a), veh/h        | 512                                                                               | 1552                                                                              | 660                                                                               | 344                                                                               | 673                                                                               | 682                                                                               | 387                                                                                | 693                                                                                 | 639                                                                                 | 523                                                                                 | 1503                                                                                | 870                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 39.9                                                                              | 20.0                                                                              | 20.8                                                                              | 42.5                                                                              | 27.5                                                                              | 27.5                                                                              | 41.1                                                                               | 34.4                                                                                | 34.6                                                                                | 41.5                                                                                | 35.3                                                                                | 25.1                                                                                |
| Incr Delay (d2), s/veh       | 10.9                                                                              | 0.2                                                                               | 1.0                                                                               | 5.6                                                                               | 8.9                                                                               | 8.9                                                                               | 12.4                                                                               | 1.3                                                                                 | 1.5                                                                                 | 3.5                                                                                 | 0.7                                                                                 | 0.4                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 5.6                                                                               | 7.0                                                                               | 7.3                                                                               | 2.7                                                                               | 14.3                                                                              | 14.5                                                                              | 4.5                                                                                | 4.2                                                                                 | 4.1                                                                                 | 3.3                                                                                 | 4.0                                                                                 | 3.1                                                                                 |
| LnGrp Delay(d),s/veh         | 50.9                                                                              | 20.2                                                                              | 21.8                                                                              | 48.1                                                                              | 36.4                                                                              | 36.3                                                                              | 53.5                                                                               | 35.6                                                                                | 36.1                                                                                | 45.1                                                                                | 36.0                                                                                | 25.5                                                                                |
| LnGrp LOS                    | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | D                                                                                 | D                                                                                 | D                                                                                  | D                                                                                   | D                                                                                   | D                                                                                   | D                                                                                   | C                                                                                   |
| Approach Vol, veh/h          | 1488                                                                              |                                                                                   |                                                                                   |                                                                                   | 1279                                                                              |                                                                                   |                                                                                    |                                                                                     | 648                                                                                 |                                                                                     | 734                                                                                 |                                                                                     |
| Approach Delay, s/veh        | 28.6                                                                              |                                                                                   |                                                                                   |                                                                                   | 38.2                                                                              |                                                                                   |                                                                                    |                                                                                     | 44.1                                                                                |                                                                                     | 36.8                                                                                |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    |                                                                                     | D                                                                                   |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 11.7                                                                              | 45.4                                                                              | 14.6                                                                              | 22.5                                                                              | 16.7                                                                              | 40.4                                                                              | 13.4                                                                               | 23.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.4                                                                               | 6.2                                                                               | 4.4                                                                               | 5.9                                                                               | 4.4                                                                               | * 6.2                                                                             | 4.4                                                                                | * 5.9                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 9.4                                                                               | 39.1                                                                              | 10.6                                                                              | 40.0                                                                              | 13.6                                                                              | * 36                                                                              | 14.3                                                                               | * 37                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 7.2                                                                               | 18.3                                                                              | 10.1                                                                              | 10.1                                                                              | 12.1                                                                              | 28.3                                                                              | 8.6                                                                                | 10.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 13.4                                                                              | 0.1                                                                               | 4.9                                                                               | 0.2                                                                               | 5.9                                                                               | 0.4                                                                                | 4.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          | 35.4                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 8: West Bernardo Dr & Duenda Rd

Year 2035 + Project AM  
3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |                                                                                     |  |  |  |
| Traffic Volume (veh/h)       | 30                                                                                | 180                                                                               | 166                                                                               | 120                                                                               | 50                                                                                | 60                                                                                | 42                                                                                 | 140                                                                                 | 90                                                                                  | 120                                                                                 | 250                                                                                 | 20                                                                                  |
| Future Volume (veh/h)        | 30                                                                                | 180                                                                               | 166                                                                               | 120                                                                               | 50                                                                                | 60                                                                                | 42                                                                                 | 140                                                                                 | 90                                                                                  | 120                                                                                 | 250                                                                                 | 20                                                                                  |
| Number                       | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                  | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 33                                                                                | 196                                                                               | 180                                                                               | 130                                                                               | 54                                                                                | 65                                                                                | 46                                                                                 | 152                                                                                 | 98                                                                                  | 130                                                                                 | 272                                                                                 | 22                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                  | 2                                                                                   | 0                                                                                   | 1                                                                                   | 2                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 488                                                                               | 244                                                                               | 224                                                                               | 204                                                                               | 215                                                                               | 182                                                                               | 65                                                                                 | 317                                                                                 | 193                                                                                 | 169                                                                                 | 690                                                                                 | 55                                                                                  |
| Arrive On Green              | 0.27                                                                              | 0.27                                                                              | 0.27                                                                              | 0.12                                                                              | 0.12                                                                              | 0.12                                                                              | 0.04                                                                               | 0.15                                                                                | 0.15                                                                                | 0.10                                                                                | 0.21                                                                                | 0.21                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 888                                                                               | 816                                                                               | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                               | 2117                                                                                | 1288                                                                                | 1774                                                                                | 3319                                                                                | 267                                                                                 |
| Grp Volume(v), veh/h         | 33                                                                                | 0                                                                                 | 376                                                                               | 130                                                                               | 54                                                                                | 65                                                                                | 46                                                                                 | 126                                                                                 | 124                                                                                 | 130                                                                                 | 144                                                                                 | 150                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 0                                                                                 | 1704                                                                              | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                               | 1770                                                                                | 1635                                                                                | 1774                                                                                | 1770                                                                                | 1816                                                                                |
| Q Serve(g_s), s              | 0.8                                                                               | 0.0                                                                               | 11.2                                                                              | 3.8                                                                               | 1.4                                                                               | 2.1                                                                               | 1.4                                                                                | 3.6                                                                                 | 3.8                                                                                 | 3.9                                                                                 | 3.8                                                                                 | 3.9                                                                                 |
| Cycle Q Clear(g_c), s        | 0.8                                                                               | 0.0                                                                               | 11.2                                                                              | 3.8                                                                               | 1.4                                                                               | 2.1                                                                               | 1.4                                                                                | 3.6                                                                                 | 3.8                                                                                 | 3.9                                                                                 | 3.8                                                                                 | 3.9                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.48                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.79                                                                                | 1.00                                                                                |                                                                                     | 0.15                                                                                |
| Lane Grp Cap(c), veh/h       | 488                                                                               | 0                                                                                 | 469                                                                               | 204                                                                               | 215                                                                               | 182                                                                               | 65                                                                                 | 265                                                                                 | 245                                                                                 | 169                                                                                 | 368                                                                                 | 378                                                                                 |
| V/C Ratio(X)                 | 0.07                                                                              | 0.00                                                                              | 0.80                                                                              | 0.64                                                                              | 0.25                                                                              | 0.36                                                                              | 0.71                                                                               | 0.47                                                                                | 0.51                                                                                | 0.77                                                                                | 0.39                                                                                | 0.40                                                                                |
| Avail Cap(c_a), veh/h        | 745                                                                               | 0                                                                                 | 716                                                                               | 583                                                                               | 612                                                                               | 520                                                                               | 194                                                                                | 582                                                                                 | 537                                                                                 | 356                                                                                 | 743                                                                                 | 762                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 14.7                                                                              | 0.0                                                                               | 18.5                                                                              | 23.1                                                                              | 22.1                                                                              | 22.4                                                                              | 26.1                                                                               | 21.3                                                                                | 21.4                                                                                | 24.2                                                                                | 18.7                                                                                | 18.7                                                                                |
| Incr Delay (d2), s/veh       | 0.1                                                                               | 0.0                                                                               | 3.8                                                                               | 3.3                                                                               | 0.6                                                                               | 1.2                                                                               | 13.0                                                                               | 1.3                                                                                 | 1.6                                                                                 | 7.3                                                                                 | 0.7                                                                                 | 0.7                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.4                                                                               | 0.0                                                                               | 5.7                                                                               | 2.1                                                                               | 0.8                                                                               | 1.0                                                                               | 0.9                                                                                | 1.8                                                                                 | 1.8                                                                                 | 2.3                                                                                 | 2.0                                                                                 | 2.0                                                                                 |
| LnGrp Delay(d),s/veh         | 14.7                                                                              | 0.0                                                                               | 22.3                                                                              | 26.4                                                                              | 22.7                                                                              | 23.5                                                                              | 39.1                                                                               | 22.6                                                                                | 23.1                                                                                | 31.5                                                                                | 19.4                                                                                | 19.4                                                                                |
| LnGrp LOS                    | B                                                                                 |                                                                                   | C                                                                                 | C                                                                                 | C                                                                                 | C                                                                                 | D                                                                                  | C                                                                                   | C                                                                                   | C                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 409                                                                               |                                                                                   |                                                                                   | 249                                                                               |                                                                                   |                                                                                    | 296                                                                                 |                                                                                     |                                                                                     | 424                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 21.7                                                                              |                                                                                   |                                                                                   | 24.8                                                                              |                                                                                   |                                                                                    | 25.4                                                                                |                                                                                     |                                                                                     | 23.1                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 10.2                                                                              | 13.2                                                                              |                                                                                   | 20.1                                                                              | 7.0                                                                               | 16.4                                                                              |                                                                                    | 11.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |                                                                                    | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 11.0                                                                              | 18.0                                                                              |                                                                                   | 23.0                                                                              | 6.0                                                                               | 23.0                                                                              |                                                                                    | 18.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 5.9                                                                               | 5.8                                                                               |                                                                                   | 13.2                                                                              | 3.4                                                                               | 5.9                                                                               |                                                                                    | 5.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 2.4                                                                               |                                                                                   | 1.8                                                                               | 0.0                                                                               | 2.7                                                                               |                                                                                    | 0.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 23.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 9: West Bernardo Dr & Via Del Campo

Year 2035 + Project AM  
3/24/2016

|                              |  |  |  |  |  |  |   |   |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|---|
| Movement                     | EBL                                                                               | EBT                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                               |   |   |
| Lane Configurations          |  |  |  |                                                                                   |  |  |   |   |
| Traffic Volume (veh/h)       | 482                                                                               | 620                                                                               | 360                                                                               | 200                                                                               | 130                                                                               | 123                                                                               |   |   |
| Future Volume (veh/h)        | 482                                                                               | 620                                                                               | 360                                                                               | 200                                                                               | 130                                                                               | 123                                                                               |   |   |
| Number                       | 5                                                                                 | 2                                                                                 | 6                                                                                 | 16                                                                                | 7                                                                                 | 14                                                                                |   |   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |   |   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              |   |   |
| Adj Flow Rate, veh/h         | 524                                                                               | 674                                                                               | 391                                                                               | 217                                                                               | 141                                                                               | 134                                                                               |   |   |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 |   |   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |   |   |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |   |
| Cap, veh/h                   | 870                                                                               | 2730                                                                              | 482                                                                               | 264                                                                               | 199                                                                               | 178                                                                               |   |   |
| Arrive On Green              | 0.49                                                                              | 0.77                                                                              | 0.22                                                                              | 0.22                                                                              | 0.11                                                                              | 0.11                                                                              |   |   |
| Sat Flow, veh/h              | 1774                                                                              | 3632                                                                              | 2300                                                                              | 1209                                                                              | 1774                                                                              | 1583                                                                              |   |   |
| Grp Volume(v), veh/h         | 524                                                                               | 674                                                                               | 312                                                                               | 296                                                                               | 141                                                                               | 134                                                                               |   |   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1770                                                                              | 1646                                                                              | 1774                                                                              | 1583                                                                              |   |   |
| Q Serve(g_s), s              | 18.7                                                                              | 4.7                                                                               | 14.7                                                                              | 15.0                                                                              | 6.7                                                                               | 7.2                                                                               |   |   |
| Cycle Q Clear(g_c), s        | 18.7                                                                              | 4.7                                                                               | 14.7                                                                              | 15.0                                                                              | 6.7                                                                               | 7.2                                                                               |   |   |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   | 0.73                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Lane Grp Cap(c), veh/h       | 870                                                                               | 2730                                                                              | 387                                                                               | 360                                                                               | 199                                                                               | 178                                                                               |   |   |
| V/C Ratio(X)                 | 0.60                                                                              | 0.25                                                                              | 0.81                                                                              | 0.82                                                                              | 0.71                                                                              | 0.75                                                                              |   |   |
| Avail Cap(c_a), veh/h        | 870                                                                               | 2730                                                                              | 498                                                                               | 463                                                                               | 447                                                                               | 399                                                                               |   |   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Uniform Delay (d), s/veh     | 16.2                                                                              | 2.8                                                                               | 32.5                                                                              | 32.7                                                                              | 37.6                                                                              | 37.8                                                                              |   |   |
| Incr Delay (d2), s/veh       | 1.2                                                                               | 0.2                                                                               | 7.5                                                                               | 9.0                                                                               | 4.6                                                                               | 6.3                                                                               |   |   |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |   |
| %ile BackOfQ(50%),veh/ln     | 9.5                                                                               | 2.3                                                                               | 8.0                                                                               | 7.7                                                                               | 3.5                                                                               | 6.5                                                                               |   |   |
| LnGrp Delay(d),s/veh         | 17.3                                                                              | 3.0                                                                               | 40.1                                                                              | 41.6                                                                              | 42.1                                                                              | 44.1                                                                              |   |   |
| LnGrp LOS                    | B                                                                                 | A                                                                                 | D                                                                                 | D                                                                                 | D                                                                                 | D                                                                                 |   |   |
| Approach Vol, veh/h          |                                                                                   | 1198                                                                              | 608                                                                               |                                                                                   | 275                                                                               |                                                                                   |   |   |
| Approach Delay, s/veh        |                                                                                   | 9.3                                                                               | 40.8                                                                              |                                                                                   | 43.1                                                                              |                                                                                   |   |   |
| Approach LOS                 |                                                                                   | A                                                                                 | D                                                                                 |                                                                                   | D                                                                                 |                                                                                   |   |   |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8 |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |   |   |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 73.2                                                                              |                                                                                   | 14.6                                                                              | 48.5                                                                              | 24.7                                                                              |   |   |
| Change Period (Y+Rc), s      |                                                                                   | 5.5                                                                               |                                                                                   | * 4.7                                                                             | 5.5                                                                               | * 5.5                                                                             |   |   |
| Max Green Setting (Gmax), s  |                                                                                   | 67.7                                                                              |                                                                                   | * 22                                                                              | 38.6                                                                              | * 25                                                                              |   |   |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 6.7                                                                               |                                                                                   | 9.2                                                                               | 20.7                                                                              | 17.0                                                                              |   |   |
| Green Ext Time (p_c), s      |                                                                                   | 7.2                                                                               |                                                                                   | 0.7                                                                               | 5.8                                                                               | 2.2                                                                               |   |   |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 23.0                                                                              |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |   |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |



# HCM 2010 Signalized Intersection Summary

## 10: Bernardo Center Dr & West Bernardo Dr

Year 2035 + Project AM  
3/24/2016

|                              |  |  |  |  |  |  |  |      |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|
| Movement                     | EBL                                                                               | EBT                                                                               | WBU                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                                 |      |
| Lane Configurations          |  |  |  |  |  |  |  |      |
| Traffic Volume (veh/h)       | 716                                                                               | 580                                                                               | 5                                                                                 | 610                                                                               | 826                                                                               | 97                                                                                | 246                                                                                 |      |
| Future Volume (veh/h)        | 716                                                                               | 580                                                                               | 5                                                                                 | 610                                                                               | 826                                                                               | 97                                                                                | 246                                                                                 |      |
| Number                       | 1                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 12                                                                                | 3                                                                                 | 18                                                                                  |      |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   |      |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.97                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              |                                                                                   | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                                |      |
| Adj Flow Rate, veh/h         | 778                                                                               | 630                                                                               |                                                                                   | 663                                                                               | 898                                                                               | 105                                                                               | 267                                                                                 |      |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                   |      |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              |                                                                                   | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                |      |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   |      |
| Cap, veh/h                   | 910                                                                               | 2480                                                                              |                                                                                   | 1325                                                                              | 1464                                                                              | 285                                                                               | 673                                                                                 |      |
| Arrive On Green              | 0.26                                                                              | 0.70                                                                              |                                                                                   | 0.37                                                                              | 0.37                                                                              | 0.16                                                                              | 0.16                                                                                |      |
| Sat Flow, veh/h              | 3442                                                                              | 3632                                                                              |                                                                                   | 3632                                                                              | 2714                                                                              | 1774                                                                              | 1583                                                                                |      |
| Grp Volume(v), veh/h         | 778                                                                               | 630                                                                               |                                                                                   | 663                                                                               | 898                                                                               | 105                                                                               | 267                                                                                 |      |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1770                                                                              |                                                                                   | 1770                                                                              | 1357                                                                              | 1774                                                                              | 1583                                                                                |      |
| Q Serve(g_s), s              | 15.3                                                                              | 4.6                                                                               |                                                                                   | 10.3                                                                              | 16.4                                                                              | 3.8                                                                               | 8.3                                                                                 |      |
| Cycle Q Clear(g_c), s        | 15.3                                                                              | 4.6                                                                               |                                                                                   | 10.3                                                                              | 16.4                                                                              | 3.8                                                                               | 8.3                                                                                 |      |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Lane Grp Cap(c), veh/h       | 910                                                                               | 2480                                                                              |                                                                                   | 1325                                                                              | 1464                                                                              | 285                                                                               | 673                                                                                 |      |
| V/C Ratio(X)                 | 0.86                                                                              | 0.25                                                                              |                                                                                   | 0.50                                                                              | 0.61                                                                              | 0.37                                                                              | 0.40                                                                                |      |
| Avail Cap(c_a), veh/h        | 1091                                                                              | 2480                                                                              |                                                                                   | 1494                                                                              | 1593                                                                              | 821                                                                               | 1151                                                                                |      |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Uniform Delay (d), s/veh     | 24.9                                                                              | 3.9                                                                               |                                                                                   | 17.2                                                                              | 11.5                                                                              | 26.7                                                                              | 14.2                                                                                |      |
| Incr Delay (d2), s/veh       | 5.9                                                                               | 0.1                                                                               |                                                                                   | 0.3                                                                               | 0.6                                                                               | 0.8                                                                               | 0.4                                                                                 |      |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 |      |
| %ile BackOfQ(50%),veh/ln     | 8.0                                                                               | 2.2                                                                               |                                                                                   | 5.0                                                                               | 6.1                                                                               | 1.9                                                                               | 3.7                                                                                 |      |
| LnGrp Delay(d),s/veh         | 30.8                                                                              | 3.9                                                                               |                                                                                   | 17.5                                                                              | 12.1                                                                              | 27.5                                                                              | 14.6                                                                                |      |
| LnGrp LOS                    | C                                                                                 | A                                                                                 |                                                                                   | B                                                                                 | B                                                                                 | C                                                                                 | B                                                                                   |      |
| Approach Vol, veh/h          |                                                                                   | 1408                                                                              |                                                                                   | 1561                                                                              |                                                                                   | 372                                                                               |                                                                                     |      |
| Approach Delay, s/veh        |                                                                                   | 18.8                                                                              |                                                                                   | 14.4                                                                              |                                                                                   | 18.2                                                                              |                                                                                     |      |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   | B                                                                                 |                                                                                   | B                                                                                 |                                                                                     |      |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8    |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                     | 8    |
| Phs Duration (G+Y+Rc), s     | 23.3                                                                              | 32.2                                                                              |                                                                                   |                                                                                   |                                                                                   | 55.5                                                                              |                                                                                     | 15.9 |
| Change Period (Y+Rc), s      | 4.4                                                                               | 5.5                                                                               |                                                                                   |                                                                                   |                                                                                   | * 5.5                                                                             |                                                                                     | 4.4  |
| Max Green Setting (Gmax), s  | 22.6                                                                              | 30.1                                                                              |                                                                                   |                                                                                   |                                                                                   | * 49                                                                              |                                                                                     | 33.0 |
| Max Q Clear Time (g_c+I1), s | 17.3                                                                              | 18.4                                                                              |                                                                                   |                                                                                   |                                                                                   | 6.6                                                                               |                                                                                     | 10.3 |
| Green Ext Time (p_c), s      | 1.5                                                                               | 8.3                                                                               |                                                                                   |                                                                                   |                                                                                   | 19.1                                                                              |                                                                                     | 1.1  |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 16.7                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |

# HCM 2010 Signalized Intersection Summary

## 1: Camino San Bernardo & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 10                                                                                | 1000                                                                              | 230                                                                               | 402                                                                               | 827                                                                               | 10                                                                                | 120                                                                                | 10                                                                                  | 388                                                                                 | 70                                                                                  | 20                                                                                  | 30                                                                                  |
| Future Volume (veh/h)        | 10                                                                                | 1000                                                                              | 230                                                                               | 402                                                                               | 827                                                                               | 10                                                                                | 120                                                                                | 10                                                                                  | 388                                                                                 | 70                                                                                  | 20                                                                                  | 30                                                                                  |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.99                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 10                                                                                | 1042                                                                              | 240                                                                               | 419                                                                               | 861                                                                               | 10                                                                                | 125                                                                                | 10                                                                                  | 404                                                                                 | 73                                                                                  | 21                                                                                  | 31                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                  | 2                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                               | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 22                                                                                | 1090                                                                              | 250                                                                               | 460                                                                               | 1805                                                                              | 21                                                                                | 434                                                                                | 571                                                                                 | 511                                                                                 | 125                                                                                 | 39                                                                                  | 33                                                                                  |
| Arrive On Green              | 0.01                                                                              | 0.38                                                                              | 0.38                                                                              | 0.13                                                                              | 0.50                                                                              | 0.50                                                                              | 0.32                                                                               | 0.32                                                                                | 0.32                                                                                | 0.32                                                                                | 0.32                                                                                | 0.32                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 2851                                                                              | 654                                                                               | 3442                                                                              | 3583                                                                              | 42                                                                                | 1347                                                                               | 1770                                                                                | 1582                                                                                | 192                                                                                 | 121                                                                                 | 103                                                                                 |
| Grp Volume(v), veh/h         | 10                                                                                | 645                                                                               | 637                                                                               | 419                                                                               | 425                                                                               | 446                                                                               | 125                                                                                | 10                                                                                  | 404                                                                                 | 125                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1736                                                                              | 1721                                                                              | 1770                                                                              | 1855                                                                              | 1347                                                                               | 1770                                                                                | 1582                                                                                | 416                                                                                 | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.5                                                                               | 31.8                                                                              | 32.2                                                                              | 10.8                                                                              | 14.1                                                                              | 14.1                                                                              | 0.0                                                                                | 0.3                                                                                 | 20.9                                                                                | 7.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.5                                                                               | 31.8                                                                              | 32.2                                                                              | 10.8                                                                              | 14.1                                                                              | 14.1                                                                              | 7.9                                                                                | 0.3                                                                                 | 20.9                                                                                | 28.2                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.38                                                                              | 1.00                                                                              |                                                                                   | 0.02                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 0.58                                                                                |                                                                                     | 0.25                                                                                |
| Lane Grp Cap(c), veh/h       | 22                                                                                | 677                                                                               | 664                                                                               | 460                                                                               | 891                                                                               | 934                                                                               | 434                                                                                | 571                                                                                 | 511                                                                                 | 198                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.46                                                                              | 0.95                                                                              | 0.96                                                                              | 0.91                                                                              | 0.48                                                                              | 0.48                                                                              | 0.29                                                                               | 0.02                                                                                | 0.79                                                                                | 0.63                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 99                                                                                | 679                                                                               | 666                                                                               | 460                                                                               | 891                                                                               | 934                                                                               | 434                                                                                | 571                                                                                 | 511                                                                                 | 198                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 44.1                                                                              | 27.0                                                                              | 27.1                                                                              | 38.4                                                                              | 14.6                                                                              | 14.6                                                                              | 23.3                                                                               | 20.7                                                                                | 27.7                                                                                | 35.1                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 14.3                                                                              | 23.6                                                                              | 25.2                                                                              | 22.3                                                                              | 0.4                                                                               | 0.4                                                                               | 0.4                                                                                | 0.0                                                                                 | 8.3                                                                                 | 6.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.3                                                                               | 19.8                                                                              | 20.0                                                                              | 6.5                                                                               | 6.9                                                                               | 7.3                                                                               | 2.4                                                                                | 0.2                                                                                 | 10.3                                                                                | 3.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 58.4                                                                              | 50.5                                                                              | 52.3                                                                              | 60.7                                                                              | 15.0                                                                              | 15.0                                                                              | 23.6                                                                               | 20.7                                                                                | 35.9                                                                                | 41.5                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | E                                                                                 | D                                                                                 | D                                                                                 | E                                                                                 | B                                                                                 | B                                                                                 | C                                                                                  | C                                                                                   | D                                                                                   | D                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1292                                                                              |                                                                                   |                                                                                   | 1290                                                                              |                                                                                   |                                                                                    | 539                                                                                 |                                                                                     |                                                                                     | 125                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 51.5                                                                              |                                                                                   |                                                                                   | 29.8                                                                              |                                                                                   |                                                                                    | 32.8                                                                                |                                                                                     |                                                                                     | 41.5                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 16.0                                                                              | 39.9                                                                              |                                                                                   | 34.0                                                                              | 5.1                                                                               | 50.8                                                                              |                                                                                    | 34.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 5.5                                                                               |                                                                                   | 5.0                                                                               | 4.0                                                                               | 5.5                                                                               |                                                                                    | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 12.0                                                                              | 34.5                                                                              |                                                                                   | 29.0                                                                              | 5.0                                                                               | 41.5                                                                              |                                                                                    | 29.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 12.8                                                                              | 34.2                                                                              |                                                                                   | 30.2                                                                              | 2.5                                                                               | 16.1                                                                              |                                                                                    | 22.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.2                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 15.0                                                                              |                                                                                    | 2.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 39.4                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 2: Via Del Campo & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 20                                                                                | 1488                                                                              | 60                                                                                | 49                                                                                | 1069                                                                              | 10                                                                                | 350                                                                                | 10                                                                                  | 449                                                                                 | 10                                                                                  | 10                                                                                  | 10                                                                                  |
| Future Volume (veh/h)        | 20                                                                                | 1488                                                                              | 60                                                                                | 49                                                                                | 1069                                                                              | 10                                                                                | 350                                                                                | 10                                                                                  | 449                                                                                 | 10                                                                                  | 10                                                                                  | 10                                                                                  |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.98                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1900                                                                               | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 22                                                                                | 1617                                                                              | 65                                                                                | 53                                                                                | 1162                                                                              | 11                                                                                | 380                                                                                | 11                                                                                  | 488                                                                                 | 11                                                                                  | 11                                                                                  | 11                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 0                                                                                  | 1                                                                                   | 1                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 29                                                                                | 1770                                                                              | 71                                                                                | 68                                                                                | 1912                                                                              | 18                                                                                | 262                                                                                | 6                                                                                   | 540                                                                                 | 33                                                                                  | 32                                                                                  | 16                                                                                  |
| Arrive On Green              | 0.02                                                                              | 0.51                                                                              | 0.51                                                                              | 0.04                                                                              | 0.53                                                                              | 0.53                                                                              | 0.35                                                                               | 0.35                                                                                | 0.35                                                                                | 0.35                                                                                | 0.35                                                                                | 0.35                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 3469                                                                              | 139                                                                               | 1774                                                                              | 3592                                                                              | 34                                                                                | 617                                                                                | 18                                                                                  | 1559                                                                                | 0                                                                                   | 92                                                                                  | 46                                                                                  |
| Grp Volume(v), veh/h         | 22                                                                                | 822                                                                               | 860                                                                               | 53                                                                                | 572                                                                               | 601                                                                               | 391                                                                                | 0                                                                                   | 488                                                                                 | 33                                                                                  | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1838                                                                              | 1774                                                                              | 1770                                                                              | 1857                                                                              | 635                                                                                | 0                                                                                   | 1559                                                                                | 138                                                                                 | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 1.8                                                                               | 62.7                                                                              | 63.5                                                                              | 4.4                                                                               | 33.0                                                                              | 33.0                                                                              | 0.0                                                                                | 0.0                                                                                 | 43.9                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 1.8                                                                               | 62.7                                                                              | 63.5                                                                              | 4.4                                                                               | 33.0                                                                              | 33.0                                                                              | 51.1                                                                               | 0.0                                                                                 | 43.9                                                                                | 51.1                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.08                                                                              | 1.00                                                                              |                                                                                   | 0.02                                                                              | 0.97                                                                               |                                                                                     | 1.00                                                                                | 0.33                                                                                |                                                                                     | 0.33                                                                                |
| Lane Grp Cap(c), veh/h       | 29                                                                                | 903                                                                               | 938                                                                               | 68                                                                                | 942                                                                               | 988                                                                               | 268                                                                                | 0                                                                                   | 540                                                                                 | 80                                                                                  | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.77                                                                              | 0.91                                                                              | 0.92                                                                              | 0.78                                                                              | 0.61                                                                              | 0.61                                                                              | 1.46                                                                               | 0.00                                                                                | 0.90                                                                                | 0.41                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 75                                                                                | 925                                                                               | 961                                                                               | 79                                                                                | 942                                                                               | 988                                                                               | 268                                                                                | 0                                                                                   | 540                                                                                 | 80                                                                                  | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 72.3                                                                              | 33.0                                                                              | 33.2                                                                              | 70.3                                                                              | 23.8                                                                              | 23.8                                                                              | 52.8                                                                               | 0.0                                                                                 | 45.8                                                                                | 39.6                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 34.2                                                                              | 12.7                                                                              | 13.1                                                                              | 33.7                                                                              | 1.1                                                                               | 1.1                                                                               | 225.8                                                                              | 0.0                                                                                 | 18.5                                                                                | 3.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 1.2                                                                               | 33.8                                                                              | 35.4                                                                              | 2.8                                                                               | 16.4                                                                              | 17.1                                                                              | 27.7                                                                               | 0.0                                                                                 | 21.7                                                                                | 1.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 106.5                                                                             | 45.8                                                                              | 46.4                                                                              | 104.0                                                                             | 25.0                                                                              | 24.9                                                                              | 278.6                                                                              | 0.0                                                                                 | 64.3                                                                                | 43.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | F                                                                                 | D                                                                                 | D                                                                                 | F                                                                                 | C                                                                                 | C                                                                                 | F                                                                                  |                                                                                     | E                                                                                   | D                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1704                                                                              |                                                                                   |                                                                                   | 1226                                                                              |                                                                                   |                                                                                    | 879                                                                                 |                                                                                     |                                                                                     | 33                                                                                  |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 46.9                                                                              |                                                                                   |                                                                                   | 28.4                                                                              |                                                                                   |                                                                                    | 159.6                                                                               |                                                                                     |                                                                                     | 43.0                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | F                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 10.0                                                                              | 81.1                                                                              |                                                                                   | 56.3                                                                              | 6.8                                                                               | 84.4                                                                              |                                                                                    | 56.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.4                                                                               | 5.9                                                                               |                                                                                   | * 5.2                                                                             | 4.4                                                                               | * 5.9                                                                             |                                                                                    | 5.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 6.6                                                                               | 77.1                                                                              |                                                                                   | * 51                                                                              | 6.2                                                                               | * 78                                                                              |                                                                                    | 50.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 6.4                                                                               | 65.5                                                                              |                                                                                   | 53.1                                                                              | 3.8                                                                               | 35.0                                                                              |                                                                                    | 53.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 9.7                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 29.7                                                                              |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 66.7                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 3: Project Dwy/Matinal Rd & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 110                                                                               | 1600                                                                              | 87                                                                                | 268                                                                               | 990                                                                               | 60                                                                                | 58                                                                                 | 5                                                                                   | 180                                                                                 | 50                                                                                  | 7                                                                                   | 120                                                                                 |
| Future Volume (veh/h)        | 110                                                                               | 1600                                                                              | 87                                                                                | 268                                                                               | 990                                                                               | 60                                                                                | 58                                                                                 | 5                                                                                   | 180                                                                                 | 50                                                                                  | 7                                                                                   | 120                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.99                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 120                                                                               | 1739                                                                              | 95                                                                                | 291                                                                               | 1076                                                                              | 65                                                                                | 63                                                                                 | 5                                                                                   | 196                                                                                 | 54                                                                                  | 8                                                                                   | 130                                                                                 |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                  | 1                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 151                                                                               | 1601                                                                              | 87                                                                                | 249                                                                               | 1778                                                                              | 107                                                                               | 251                                                                                | 9                                                                                   | 344                                                                                 | 94                                                                                  | 35                                                                                  | 166                                                                                 |
| Arrive On Green              | 0.09                                                                              | 0.47                                                                              | 0.47                                                                              | 0.14                                                                              | 0.52                                                                              | 0.52                                                                              | 0.22                                                                               | 0.22                                                                                | 0.22                                                                                | 0.22                                                                                | 0.22                                                                                | 0.22                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 3414                                                                              | 185                                                                               | 1774                                                                              | 3391                                                                              | 205                                                                               | 1246                                                                               | 40                                                                                  | 1550                                                                                | 200                                                                                 | 157                                                                                 | 748                                                                                 |
| Grp Volume(v), veh/h         | 120                                                                               | 895                                                                               | 939                                                                               | 291                                                                               | 561                                                                               | 580                                                                               | 63                                                                                 | 0                                                                                   | 201                                                                                 | 192                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1830                                                                              | 1774                                                                              | 1770                                                                              | 1827                                                                              | 1246                                                                               | 0                                                                                   | 1589                                                                                | 1105                                                                                | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 6.1                                                                               | 43.4                                                                              | 43.4                                                                              | 13.0                                                                              | 20.5                                                                              | 20.5                                                                              | 0.0                                                                                | 0.0                                                                                 | 10.4                                                                                | 6.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 6.1                                                                               | 43.4                                                                              | 43.4                                                                              | 13.0                                                                              | 20.5                                                                              | 20.5                                                                              | 7.5                                                                                | 0.0                                                                                 | 10.4                                                                                | 16.6                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.10                                                                              | 1.00                                                                              |                                                                                   | 0.11                                                                              | 1.00                                                                               |                                                                                     | 0.98                                                                                | 0.28                                                                                |                                                                                     | 0.68                                                                                |
| Lane Grp Cap(c), veh/h       | 151                                                                               | 830                                                                               | 858                                                                               | 249                                                                               | 928                                                                               | 958                                                                               | 251                                                                                | 0                                                                                   | 353                                                                                 | 295                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.80                                                                              | 1.08                                                                              | 1.09                                                                              | 1.17                                                                              | 0.61                                                                              | 0.61                                                                              | 0.25                                                                               | 0.00                                                                                | 0.57                                                                                | 0.65                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 249                                                                               | 830                                                                               | 858                                                                               | 249                                                                               | 928                                                                               | 958                                                                               | 360                                                                                | 0                                                                                   | 491                                                                                 | 411                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 41.6                                                                              | 24.6                                                                              | 24.6                                                                              | 39.8                                                                              | 15.3                                                                              | 15.3                                                                              | 30.9                                                                               | 0.0                                                                                 | 32.1                                                                                | 34.4                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 9.1                                                                               | 54.8                                                                              | 59.7                                                                              | 110.1                                                                             | 1.1                                                                               | 1.1                                                                               | 0.5                                                                                | 0.0                                                                                 | 1.4                                                                                 | 2.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 3.4                                                                               | 33.6                                                                              | 35.9                                                                              | 13.9                                                                              | 10.3                                                                              | 10.6                                                                              | 1.4                                                                                | 0.0                                                                                 | 4.7                                                                                 | 4.9                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 50.7                                                                              | 79.4                                                                              | 84.2                                                                              | 149.9                                                                             | 16.5                                                                              | 16.4                                                                              | 31.4                                                                               | 0.0                                                                                 | 33.5                                                                                | 36.8                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | D                                                                                 | F                                                                                 | F                                                                                 | F                                                                                 | B                                                                                 | B                                                                                 | C                                                                                  |                                                                                     | C                                                                                   | D                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1954                                                                              |                                                                                   |                                                                                   | 1432                                                                              |                                                                                   |                                                                                    | 264                                                                                 |                                                                                     |                                                                                     | 192                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 80.0                                                                              |                                                                                   |                                                                                   | 43.6                                                                              |                                                                                   |                                                                                    | 33.0                                                                                |                                                                                     |                                                                                     | 36.8                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 17.0                                                                              | 50.4                                                                              |                                                                                   | 25.2                                                                              | 11.9                                                                              | 55.5                                                                              |                                                                                    | 25.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 7.0                                                                               |                                                                                   | 4.6                                                                               | 4.0                                                                               | * 7                                                                               |                                                                                    | * 4.6                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 13.0                                                                              | 43.4                                                                              |                                                                                   | 28.0                                                                              | 13.0                                                                              | * 44                                                                              |                                                                                    | * 29                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 15.0                                                                              | 45.4                                                                              |                                                                                   | 18.6                                                                              | 8.1                                                                               | 22.5                                                                              |                                                                                    | 12.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.0                                                                               |                                                                                   | 2.0                                                                               | 0.1                                                                               | 18.5                                                                              |                                                                                    | 2.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 61.0                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 4: West Bernardo Dr & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |  |  |  |                                                                                     |
| Traffic Volume (veh/h)       | 167                                                                               | 1741                                                                              | 62                                                                                | 200                                                                               | 1229                                                                              | 510                                                                               | 198                                                                                | 360                                                                                 | 700                                                                                 | 350                                                                                 | 90                                                                                  | 81                                                                                  |
| Future Volume (veh/h)        | 167                                                                               | 1741                                                                              | 62                                                                                | 200                                                                               | 1229                                                                              | 510                                                                               | 198                                                                                | 360                                                                                 | 700                                                                                 | 350                                                                                 | 90                                                                                  | 81                                                                                  |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                               | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 170                                                                               | 1777                                                                              | 63                                                                                | 204                                                                               | 1254                                                                              | 520                                                                               | 202                                                                                | 367                                                                                 | 714                                                                                 | 357                                                                                 | 92                                                                                  | 83                                                                                  |
| Adj No. of Lanes             | 2                                                                                 | 3                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 | 1                                                                                 | 2                                                                                  | 2                                                                                   | 1                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                               | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 208                                                                               | 1759                                                                              | 62                                                                                | 358                                                                               | 1395                                                                              | 623                                                                               | 269                                                                                | 943                                                                                 | 585                                                                                 | 431                                                                                 | 580                                                                                 | 475                                                                                 |
| Arrive On Green              | 0.06                                                                              | 0.35                                                                              | 0.35                                                                              | 0.10                                                                              | 0.39                                                                              | 0.39                                                                              | 0.08                                                                               | 0.27                                                                                | 0.27                                                                                | 0.13                                                                                | 0.31                                                                                | 0.31                                                                                |
| Sat Flow, veh/h              | 3442                                                                              | 5043                                                                              | 179                                                                               | 3442                                                                              | 3539                                                                              | 1580                                                                              | 3442                                                                               | 3539                                                                                | 1578                                                                                | 3442                                                                                | 1850                                                                                | 1515                                                                                |
| Grp Volume(v), veh/h         | 170                                                                               | 1194                                                                              | 646                                                                               | 204                                                                               | 1254                                                                              | 520                                                                               | 202                                                                                | 367                                                                                 | 714                                                                                 | 357                                                                                 | 88                                                                                  | 87                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1695                                                                              | 1831                                                                              | 1721                                                                              | 1770                                                                              | 1580                                                                              | 1721                                                                               | 1770                                                                                | 1578                                                                                | 1721                                                                                | 1770                                                                                | 1595                                                                                |
| Q Serve(g_s), s              | 6.3                                                                               | 45.1                                                                              | 45.1                                                                              | 7.3                                                                               | 43.0                                                                              | 25.5                                                                              | 7.4                                                                                | 11.0                                                                                | 28.7                                                                                | 13.1                                                                                | 4.6                                                                                 | 5.1                                                                                 |
| Cycle Q Clear(g_c), s        | 6.3                                                                               | 45.1                                                                              | 45.1                                                                              | 7.3                                                                               | 43.0                                                                              | 25.5                                                                              | 7.4                                                                                | 11.0                                                                                | 28.7                                                                                | 13.1                                                                                | 4.6                                                                                 | 5.1                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.10                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.95                                                                                |
| Lane Grp Cap(c), veh/h       | 208                                                                               | 1182                                                                              | 639                                                                               | 358                                                                               | 1395                                                                              | 623                                                                               | 269                                                                                | 943                                                                                 | 585                                                                                 | 431                                                                                 | 555                                                                                 | 500                                                                                 |
| V/C Ratio(X)                 | 0.82                                                                              | 1.01                                                                              | 1.01                                                                              | 0.57                                                                              | 0.90                                                                              | 0.84                                                                              | 0.75                                                                               | 0.39                                                                                | 1.22                                                                                | 0.83                                                                                | 0.16                                                                                | 0.17                                                                                |
| Avail Cap(c_a), veh/h        | 208                                                                               | 1182                                                                              | 639                                                                               | 415                                                                               | 1453                                                                              | 649                                                                               | 908                                                                                | 1070                                                                                | 642                                                                                 | 801                                                                                 | 555                                                                                 | 500                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 60.1                                                                              | 42.1                                                                              | 42.1                                                                              | 55.2                                                                              | 36.8                                                                              | 15.6                                                                              | 58.4                                                                               | 38.8                                                                                | 25.7                                                                                | 55.2                                                                                | 32.0                                                                                | 32.2                                                                                |
| Incr Delay (d2), s/veh       | 22.1                                                                              | 28.6                                                                              | 38.4                                                                              | 1.4                                                                               | 7.7                                                                               | 9.0                                                                               | 4.2                                                                                | 0.3                                                                                 | 113.9                                                                               | 4.1                                                                                 | 0.1                                                                                 | 0.2                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 3.6                                                                               | 25.7                                                                              | 29.5                                                                              | 3.6                                                                               | 22.4                                                                              | 12.7                                                                              | 3.7                                                                                | 5.4                                                                                 | 33.6                                                                                | 6.5                                                                                 | 2.3                                                                                 | 2.3                                                                                 |
| LnGrp Delay(d),s/veh         | 82.1                                                                              | 70.8                                                                              | 80.5                                                                              | 56.6                                                                              | 44.5                                                                              | 24.6                                                                              | 62.6                                                                               | 39.1                                                                                | 139.5                                                                               | 59.3                                                                                | 32.2                                                                                | 32.4                                                                                |
| LnGrp LOS                    | F                                                                                 | F                                                                                 | F                                                                                 | E                                                                                 | D                                                                                 | C                                                                                 | E                                                                                  | D                                                                                   | F                                                                                   | E                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h          | 2010                                                                              |                                                                                   |                                                                                   | 1978                                                                              |                                                                                   |                                                                                   | 1283                                                                               |                                                                                     |                                                                                     | 532                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 74.9                                                                              |                                                                                   |                                                                                   | 40.5                                                                              |                                                                                   |                                                                                   | 98.7                                                                               |                                                                                     |                                                                                     | 50.4                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | E                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | F                                                                                  |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 17.9                                                                              | 51.0                                                                              | 14.5                                                                              | 46.0                                                                              | 12.2                                                                              | 56.7                                                                              | 20.6                                                                               | 39.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.4                                                                               | 5.9                                                                               | 4.4                                                                               | 5.4                                                                               | 4.4                                                                               | 5.7                                                                               | 4.4                                                                                | 5.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 15.6                                                                              | 45.1                                                                              | 34.1                                                                              | 35.1                                                                              | 7.8                                                                               | 53.1                                                                              | 30.1                                                                               | 39.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 9.3                                                                               | 47.1                                                                              | 9.4                                                                               | 7.1                                                                               | 8.3                                                                               | 45.0                                                                              | 15.1                                                                               | 30.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.7                                                                               | 0.0                                                                               | 0.7                                                                               | 7.5                                                                               | 0.0                                                                               | 6.0                                                                               | 1.1                                                                                | 3.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          | 66.2                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 | E                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 5: I-15 SB Ramps & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |                                                                                   |  |  |                                                                                    |                                                                                     |                                                                                     |  |                                                                                     |  |
| Traffic Volume (veh/h)       | 0                                                                                 | 1765                                                                              | 1016                                                                              | 0                                                                                 | 1368                                                                              | 600                                                                               | 0                                                                                  | 0                                                                                   | 0                                                                                   | 460                                                                                 | 0                                                                                   | 551                                                                                 |
| Future Volume (veh/h)        | 0                                                                                 | 1765                                                                              | 1016                                                                              | 0                                                                                 | 1368                                                                              | 600                                                                               | 0                                                                                  | 0                                                                                   | 0                                                                                   | 460                                                                                 | 0                                                                                   | 551                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                |                                                                                    |                                                                                     |                                                                                     | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 0                                                                                 | 1863                                                                              | 1863                                                                              | 0                                                                                 | 1863                                                                              | 1863                                                                              |                                                                                    |                                                                                     |                                                                                     | 1863                                                                                | 0                                                                                   | 1863                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 2340                                                                              | 724                                                                               | 0                                                                                 | 1425                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 479                                                                                 | 0                                                                                   | 574                                                                                 |
| Adj No. of Lanes             | 0                                                                                 | 3                                                                                 | 1                                                                                 | 0                                                                                 | 3                                                                                 | 1                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 2                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.96                                                                              | 0.96                                                                              | 0.92                                                                              | 0.96                                                                              | 0.96                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.96                                                                                | 0.92                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %         | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 0                                                                                 | 3647                                                                              | 1033                                                                              | 0                                                                                 | 3647                                                                              | 1033                                                                              |                                                                                    |                                                                                     |                                                                                     | 765                                                                                 | 0                                                                                   | 620                                                                                 |
| Arrive On Green              | 0.00                                                                              | 0.65                                                                              | 0.65                                                                              | 0.00                                                                              | 1.00                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.22                                                                                | 0.00                                                                                | 0.22                                                                                |
| Sat Flow, veh/h              | 0                                                                                 | 5588                                                                              | 1583                                                                              | 0                                                                                 | 5588                                                                              | 1583                                                                              |                                                                                    |                                                                                     |                                                                                     | 3442                                                                                | 0                                                                                   | 2787                                                                                |
| Grp Volume(v), veh/h         | 0                                                                                 | 2340                                                                              | 724                                                                               | 0                                                                                 | 1425                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 479                                                                                 | 0                                                                                   | 574                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1863                                                                              | 1583                                                                              | 0                                                                                 | 1863                                                                              | 1583                                                                              |                                                                                    |                                                                                     |                                                                                     | 1721                                                                                | 0                                                                                   | 1393                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 25.0                                                                              | 29.3                                                                              | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 12.6                                                                                | 0.0                                                                                 | 20.2                                                                                |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 25.0                                                                              | 29.3                                                                              | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 12.6                                                                                | 0.0                                                                                 | 20.2                                                                                |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 1.00                                                                              | 0.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 3647                                                                              | 1033                                                                              | 0                                                                                 | 3647                                                                              | 1033                                                                              |                                                                                    |                                                                                     |                                                                                     | 765                                                                                 | 0                                                                                   | 620                                                                                 |
| V/C Ratio(X)                 | 0.00                                                                              | 0.64                                                                              | 0.70                                                                              | 0.00                                                                              | 0.39                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.63                                                                                | 0.00                                                                                | 0.93                                                                                |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 3647                                                                              | 1033                                                                              | 0                                                                                 | 3647                                                                              | 1033                                                                              |                                                                                    |                                                                                     |                                                                                     | 767                                                                                 | 0                                                                                   | 621                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                              | 2.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.00                                                                              | 0.09                                                                              | 0.09                                                                              | 0.00                                                                              | 0.77                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 10.4                                                                              | 11.1                                                                              | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 35.1                                                                                | 0.0                                                                                 | 38.1                                                                                |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.1                                                                               | 0.4                                                                               | 0.0                                                                               | 0.2                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 1.6                                                                                 | 0.0                                                                                 | 20.0                                                                                |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 12.8                                                                              | 12.8                                                                              | 0.0                                                                               | 0.1                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 6.2                                                                                 | 0.0                                                                                 | 9.5                                                                                 |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 10.5                                                                              | 11.5                                                                              | 0.0                                                                               | 0.2                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 36.7                                                                                | 0.0                                                                                 | 58.1                                                                                |
| LnGrp LOS                    |                                                                                   | B                                                                                 | B                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     | D                                                                                   |                                                                                     | E                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 3064                                                                              |                                                                                   |                                                                                   | 1425                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 1053                                                                                |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 10.7                                                                              |                                                                                   |                                                                                   | 0.2                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 48.4                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 71.7                                                                              |                                                                                   | 28.3                                                                              |                                                                                   | 71.7                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 6.4                                                                               |                                                                                   | 6.1                                                                               |                                                                                   | 6.4                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 65.2                                                                              |                                                                                   | 22.3                                                                              |                                                                                   | 65.2                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 31.3                                                                              |                                                                                   | 22.2                                                                              |                                                                                   | 2.0                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 32.7                                                                              |                                                                                   | 0.1                                                                               |                                                                                   | 59.2                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 15.2                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 6: I-15 NB Ramps & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |                                                                                   |  |  |  |                                                                                     |  |                                                                                     |                                                                                     |                                                                                     |
| Traffic Volume (veh/h)       | 0                                                                                 | 1014                                                                              | 1231                                                                              | 0                                                                                 | 1206                                                                              | 510                                                                               | 822                                                                                | 0                                                                                   | 490                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 0                                                                                 | 1014                                                                              | 1231                                                                              | 0                                                                                 | 1206                                                                              | 510                                                                               | 822                                                                                | 0                                                                                   | 490                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 0                                                                                 | 1863                                                                              | 1863                                                                              | 0                                                                                 | 1863                                                                              | 1863                                                                              | 1863                                                                               | 0                                                                                   | 1863                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Adj Flow Rate, veh/h         | 0                                                                                 | 1079                                                                              | 0                                                                                 | 0                                                                                 | 1283                                                                              | 543                                                                               | 874                                                                                | 0                                                                                   | 521                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Adj No. of Lanes             | 0                                                                                 | 3                                                                                 | 1                                                                                 | 0                                                                                 | 3                                                                                 | 1                                                                                 | 2                                                                                  | 0                                                                                   | 2                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Peak Hour Factor             | 0.92                                                                              | 0.94                                                                              | 0.94                                                                              | 0.92                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                               | 0.92                                                                                | 0.94                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Percent Heavy Veh, %         | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 0                                                                                   | 2                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Cap, veh/h                   | 0                                                                                 | 3231                                                                              | 915                                                                               | 0                                                                                 | 2940                                                                              | 915                                                                               | 1022                                                                               | 0                                                                                   | 827                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Arrive On Green              | 0.00                                                                              | 0.97                                                                              | 0.00                                                                              | 0.00                                                                              | 0.58                                                                              | 0.58                                                                              | 0.30                                                                               | 0.00                                                                                | 0.30                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Sat Flow, veh/h              | 0                                                                                 | 5588                                                                              | 1583                                                                              | 0                                                                                 | 5253                                                                              | 1583                                                                              | 3442                                                                               | 0                                                                                   | 2787                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Grp Volume(v), veh/h         | 0                                                                                 | 1079                                                                              | 0                                                                                 | 0                                                                                 | 1283                                                                              | 543                                                                               | 874                                                                                | 0                                                                                   | 521                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1863                                                                              | 1583                                                                              | 0                                                                                 | 1695                                                                              | 1583                                                                              | 1721                                                                               | 0                                                                                   | 1393                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Q Serve(g_s), s              | 0.0                                                                               | 1.0                                                                               | 0.0                                                                               | 0.0                                                                               | 14.2                                                                              | 22.0                                                                              | 23.9                                                                               | 0.0                                                                                 | 16.2                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 1.0                                                                               | 0.0                                                                               | 0.0                                                                               | 14.2                                                                              | 22.0                                                                              | 23.9                                                                               | 0.0                                                                                 | 16.2                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 1.00                                                                              | 0.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 3231                                                                              | 915                                                                               | 0                                                                                 | 2940                                                                              | 915                                                                               | 1022                                                                               | 0                                                                                   | 827                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| V/C Ratio(X)                 | 0.00                                                                              | 0.33                                                                              | 0.00                                                                              | 0.00                                                                              | 0.44                                                                              | 0.59                                                                              | 0.86                                                                               | 0.00                                                                                | 0.63                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 3231                                                                              | 915                                                                               | 0                                                                                 | 2940                                                                              | 915                                                                               | 1167                                                                               | 0                                                                                   | 945                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| HCM Platoon Ratio            | 1.00                                                                              | 1.67                                                                              | 1.67                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Upstream Filter(I)           | 0.00                                                                              | 0.64                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 0.7                                                                               | 0.0                                                                               | 0.0                                                                               | 11.9                                                                              | 13.5                                                                              | 33.1                                                                               | 0.0                                                                                 | 30.4                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.2                                                                               | 0.0                                                                               | 0.0                                                                               | 0.5                                                                               | 2.8                                                                               | 5.8                                                                                | 0.0                                                                                 | 1.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 0.4                                                                               | 0.0                                                                               | 0.0                                                                               | 6.8                                                                               | 10.2                                                                              | 12.2                                                                               | 0.0                                                                                 | 6.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 0.9                                                                               | 0.0                                                                               | 0.0                                                                               | 12.4                                                                              | 16.4                                                                              | 38.9                                                                               | 0.0                                                                                 | 31.5                                                                                |                                                                                     |                                                                                     |                                                                                     |
| LnGrp LOS                    |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 | B                                                                                 | D                                                                                  |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1079                                                                              |                                                                                   |                                                                                   | 1826                                                                              |                                                                                   |                                                                                    | 1395                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 0.9                                                                               |                                                                                   |                                                                                   | 13.6                                                                              |                                                                                   |                                                                                    | 36.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 64.2                                                                              |                                                                                   |                                                                                   |                                                                                   | 64.2                                                                              |                                                                                    | 35.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 6.4                                                                               |                                                                                   |                                                                                   |                                                                                   | 6.4                                                                               |                                                                                    | 6.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 53.6                                                                              |                                                                                   |                                                                                   |                                                                                   | 53.6                                                                              |                                                                                    | 33.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 3.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 24.0                                                                              |                                                                                    | 25.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 33.5                                                                              |                                                                                   |                                                                                   |                                                                                   | 22.8                                                                              |                                                                                    | 3.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 17.7                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# HCM 2010 Signalized Intersection Summary

## 7: Bernardo Center Dr & Rancho Bernardo Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |                                                                                   |   |  |                                                                                     |  |  |  |
| Traffic Volume (veh/h)       | 285                                                                               | 744                                                                               | 375                                                                               | 150                                                                               | 782                                                                               | 170                                                                               | 467                                                                                | 520                                                                                 | 280                                                                                 | 200                                                                                 | 310                                                                                 | 127                                                                                 |
| Future Volume (veh/h)        | 285                                                                               | 744                                                                               | 375                                                                               | 150                                                                               | 782                                                                               | 170                                                                               | 467                                                                                | 520                                                                                 | 280                                                                                 | 200                                                                                 | 310                                                                                 | 127                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.98                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h         | 300                                                                               | 787                                                                               | 393                                                                               | 158                                                                               | 823                                                                               | 179                                                                               | 492                                                                                | 547                                                                                 | 295                                                                                 | 211                                                                                 | 326                                                                                 | 134                                                                                 |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 | 1                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                  | 2                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                               | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 360                                                                               | 1312                                                                              | 551                                                                               | 218                                                                               | 906                                                                               | 197                                                                               | 550                                                                                | 695                                                                                 | 374                                                                                 | 277                                                                                 | 827                                                                                 | 523                                                                                 |
| Arrive On Green              | 0.10                                                                              | 0.35                                                                              | 0.35                                                                              | 0.06                                                                              | 0.31                                                                              | 0.31                                                                              | 0.16                                                                               | 0.31                                                                                | 0.31                                                                                | 0.08                                                                                | 0.23                                                                                | 0.23                                                                                |
| Sat Flow, veh/h              | 3548                                                                              | 3725                                                                              | 1563                                                                              | 3442                                                                              | 2884                                                                              | 627                                                                               | 3442                                                                               | 2221                                                                                | 1196                                                                                | 3442                                                                                | 3539                                                                                | 1550                                                                                |
| Grp Volume(v), veh/h         | 300                                                                               | 787                                                                               | 393                                                                               | 158                                                                               | 505                                                                               | 497                                                                               | 492                                                                                | 436                                                                                 | 406                                                                                 | 211                                                                                 | 326                                                                                 | 134                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1863                                                                              | 1563                                                                              | 1721                                                                              | 1770                                                                              | 1742                                                                              | 1721                                                                               | 1770                                                                                | 1648                                                                                | 1721                                                                                | 1770                                                                                | 1550                                                                                |
| Q Serve(g_s), s              | 9.1                                                                               | 19.0                                                                              | 23.8                                                                              | 4.9                                                                               | 30.0                                                                              | 30.0                                                                              | 15.3                                                                               | 24.6                                                                                | 24.6                                                                                | 6.6                                                                                 | 8.5                                                                                 | 6.9                                                                                 |
| Cycle Q Clear(g_c), s        | 9.1                                                                               | 19.0                                                                              | 23.8                                                                              | 4.9                                                                               | 30.0                                                                              | 30.0                                                                              | 15.3                                                                               | 24.6                                                                                | 24.6                                                                                | 6.6                                                                                 | 8.5                                                                                 | 6.9                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.36                                                                              | 1.00                                                                               |                                                                                     | 0.73                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 360                                                                               | 1312                                                                              | 551                                                                               | 218                                                                               | 556                                                                               | 547                                                                               | 550                                                                                | 553                                                                                 | 515                                                                                 | 277                                                                                 | 827                                                                                 | 523                                                                                 |
| V/C Ratio(X)                 | 0.83                                                                              | 0.60                                                                              | 0.71                                                                              | 0.72                                                                              | 0.91                                                                              | 0.91                                                                              | 0.89                                                                               | 0.79                                                                                | 0.79                                                                                | 0.76                                                                                | 0.39                                                                                | 0.26                                                                                |
| Avail Cap(c_a), veh/h        | 370                                                                               | 1312                                                                              | 551                                                                               | 258                                                                               | 576                                                                               | 567                                                                               | 566                                                                                | 736                                                                                 | 685                                                                                 | 412                                                                                 | 1294                                                                                | 727                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 48.2                                                                              | 29.1                                                                              | 30.7                                                                              | 50.3                                                                              | 36.0                                                                              | 36.0                                                                              | 45.1                                                                               | 34.3                                                                                | 34.3                                                                                | 49.3                                                                                | 35.4                                                                                | 26.5                                                                                |
| Incr Delay (d2), s/veh       | 14.6                                                                              | 0.8                                                                               | 4.3                                                                               | 8.0                                                                               | 18.1                                                                              | 18.3                                                                              | 16.4                                                                               | 4.1                                                                                 | 4.5                                                                                 | 4.6                                                                                 | 0.3                                                                                 | 0.3                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 5.2                                                                               | 9.9                                                                               | 10.9                                                                              | 2.6                                                                               | 17.4                                                                              | 17.1                                                                              | 8.6                                                                                | 12.6                                                                                | 11.8                                                                                | 3.3                                                                                 | 4.2                                                                                 | 3.0                                                                                 |
| LnGrp Delay(d),s/veh         | 62.9                                                                              | 29.9                                                                              | 35.0                                                                              | 58.3                                                                              | 54.1                                                                              | 54.3                                                                              | 61.5                                                                               | 38.4                                                                                | 38.8                                                                                | 53.9                                                                                | 35.7                                                                                | 26.7                                                                                |
| LnGrp LOS                    | E                                                                                 | C                                                                                 | C                                                                                 | E                                                                                 | D                                                                                 | D                                                                                 | E                                                                                  | D                                                                                   | D                                                                                   | D                                                                                   | D                                                                                   | C                                                                                   |
| Approach Vol, veh/h          | 1480                                                                              |                                                                                   |                                                                                   |                                                                                   | 1160                                                                              |                                                                                   |                                                                                    |                                                                                     | 1334                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 37.9                                                                              |                                                                                   |                                                                                   |                                                                                   | 54.8                                                                              |                                                                                   |                                                                                    |                                                                                     | 47.0                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 | D                                                                                 |                                                                                   |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 11.3                                                                              | 44.7                                                                              | 21.9                                                                              | 31.5                                                                              | 15.5                                                                              | 40.6                                                                              | 13.2                                                                               | 40.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.4                                                                               | 6.2                                                                               | 4.4                                                                               | 5.9                                                                               | 4.4                                                                               | * 6.2                                                                             | 4.4                                                                                | * 5.9                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 8.2                                                                               | 37.9                                                                              | 18.0                                                                              | 40.0                                                                              | 11.4                                                                              | * 36                                                                              | 13.1                                                                               | * 46                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 6.9                                                                               | 25.8                                                                              | 17.3                                                                              | 10.5                                                                              | 11.1                                                                              | 32.0                                                                              | 8.6                                                                                | 26.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 9.0                                                                               | 0.1                                                                               | 9.0                                                                               | 0.0                                                                               | 2.4                                                                               | 0.3                                                                                | 7.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          | 45.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 8: West Bernardo Dr & Duenda Rd

3/24/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |                                                                                     |  |  |  |
| Traffic Volume (veh/h)       | 30                                                                                | 140                                                                               | 144                                                                               | 90                                                                                | 90                                                                                | 80                                                                                | 72                                                                                 | 170                                                                                 | 110                                                                                 | 130                                                                                 | 230                                                                                 | 20                                                                                  |
| Future Volume (veh/h)        | 30                                                                                | 140                                                                               | 144                                                                               | 90                                                                                | 90                                                                                | 80                                                                                | 72                                                                                 | 170                                                                                 | 110                                                                                 | 130                                                                                 | 230                                                                                 | 20                                                                                  |
| Number                       | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                  | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.98                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.98                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 33                                                                                | 152                                                                               | 157                                                                               | 98                                                                                | 98                                                                                | 87                                                                                | 78                                                                                 | 185                                                                                 | 120                                                                                 | 141                                                                                 | 250                                                                                 | 22                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                  | 2                                                                                   | 0                                                                                   | 1                                                                                   | 2                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 418                                                                               | 196                                                                               | 203                                                                               | 186                                                                               | 195                                                                               | 166                                                                               | 99                                                                                 | 365                                                                                 | 225                                                                                 | 183                                                                                 | 726                                                                                 | 63                                                                                  |
| Arrive On Green              | 0.24                                                                              | 0.24                                                                              | 0.24                                                                              | 0.10                                                                              | 0.10                                                                              | 0.10                                                                              | 0.06                                                                               | 0.17                                                                                | 0.17                                                                                | 0.10                                                                                | 0.22                                                                                | 0.22                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 833                                                                               | 861                                                                               | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                               | 2105                                                                                | 1299                                                                                | 1774                                                                                | 3287                                                                                | 287                                                                                 |
| Grp Volume(v), veh/h         | 33                                                                                | 0                                                                                 | 309                                                                               | 98                                                                                | 98                                                                                | 87                                                                                | 78                                                                                 | 154                                                                                 | 151                                                                                 | 141                                                                                 | 134                                                                                 | 138                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 0                                                                                 | 1694                                                                              | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                               | 1770                                                                                | 1634                                                                                | 1774                                                                                | 1770                                                                                | 1805                                                                                |
| Q Serve(g_s), s              | 0.8                                                                               | 0.0                                                                               | 8.9                                                                               | 2.7                                                                               | 2.6                                                                               | 2.7                                                                               | 2.3                                                                                | 4.1                                                                                 | 4.4                                                                                 | 4.0                                                                                 | 3.3                                                                                 | 3.4                                                                                 |
| Cycle Q Clear(g_c), s        | 0.8                                                                               | 0.0                                                                               | 8.9                                                                               | 2.7                                                                               | 2.6                                                                               | 2.7                                                                               | 2.3                                                                                | 4.1                                                                                 | 4.4                                                                                 | 4.0                                                                                 | 3.3                                                                                 | 3.4                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.51                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.79                                                                                | 1.00                                                                                |                                                                                     | 0.16                                                                                |
| Lane Grp Cap(c), veh/h       | 418                                                                               | 0                                                                                 | 399                                                                               | 186                                                                               | 195                                                                               | 166                                                                               | 99                                                                                 | 307                                                                                 | 284                                                                                 | 183                                                                                 | 391                                                                                 | 399                                                                                 |
| V/C Ratio(X)                 | 0.08                                                                              | 0.00                                                                              | 0.77                                                                              | 0.53                                                                              | 0.50                                                                              | 0.53                                                                              | 0.78                                                                               | 0.50                                                                                | 0.53                                                                                | 0.77                                                                                | 0.34                                                                                | 0.35                                                                                |
| Avail Cap(c_a), veh/h        | 679                                                                               | 0                                                                                 | 649                                                                               | 611                                                                               | 642                                                                               | 546                                                                               | 306                                                                                | 678                                                                                 | 626                                                                                 | 408                                                                                 | 779                                                                                 | 795                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 15.6                                                                              | 0.0                                                                               | 18.7                                                                              | 22.2                                                                              | 22.1                                                                              | 22.2                                                                              | 24.3                                                                               | 19.5                                                                                | 19.7                                                                                | 22.8                                                                                | 17.1                                                                                | 17.2                                                                                |
| Incr Delay (d2), s/veh       | 0.1                                                                               | 0.0                                                                               | 3.2                                                                               | 2.3                                                                               | 2.0                                                                               | 2.6                                                                               | 12.6                                                                               | 1.3                                                                                 | 1.5                                                                                 | 6.6                                                                                 | 0.5                                                                                 | 0.5                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.4                                                                               | 0.0                                                                               | 4.5                                                                               | 1.5                                                                               | 1.4                                                                               | 1.3                                                                               | 1.5                                                                                | 2.1                                                                                 | 2.1                                                                                 | 2.3                                                                                 | 1.7                                                                                 | 1.7                                                                                 |
| LnGrp Delay(d),s/veh         | 15.6                                                                              | 0.0                                                                               | 21.9                                                                              | 24.5                                                                              | 24.1                                                                              | 24.7                                                                              | 36.9                                                                               | 20.8                                                                                | 21.2                                                                                | 29.4                                                                                | 17.7                                                                                | 17.7                                                                                |
| LnGrp LOS                    | B                                                                                 |                                                                                   | C                                                                                 | C                                                                                 | C                                                                                 | C                                                                                 | D                                                                                  | C                                                                                   | C                                                                                   | C                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 342                                                                               |                                                                                   |                                                                                   | 283                                                                               |                                                                                   |                                                                                    | 383                                                                                 |                                                                                     |                                                                                     | 413                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 21.3                                                                              |                                                                                   |                                                                                   | 24.4                                                                              |                                                                                   |                                                                                    | 24.2                                                                                |                                                                                     |                                                                                     | 21.7                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 10.4                                                                              | 14.1                                                                              |                                                                                   | 17.3                                                                              | 7.9                                                                               | 16.5                                                                              |                                                                                    | 10.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |                                                                                    | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 12.0                                                                              | 20.0                                                                              |                                                                                   | 20.0                                                                              | 9.0                                                                               | 23.0                                                                              |                                                                                    | 18.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 6.0                                                                               | 6.4                                                                               |                                                                                   | 10.9                                                                              | 4.3                                                                               | 5.4                                                                               |                                                                                    | 4.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.2                                                                               | 2.7                                                                               |                                                                                   | 1.4                                                                               | 0.1                                                                               | 3.0                                                                               |                                                                                    | 0.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 22.8                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 9: West Bernardo Dr & Via Del Campo

3/24/2016

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| Movement                     | EBL                                                                               | EBT                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                               |   |   |
| Lane Configurations          |  |  |  |                                                                                   |  |  |   |   |
| Traffic Volume (veh/h)       | 89                                                                                | 540                                                                               | 580                                                                               | 50                                                                                | 200                                                                               | 429                                                                               |   |   |
| Future Volume (veh/h)        | 89                                                                                | 540                                                                               | 580                                                                               | 50                                                                                | 200                                                                               | 429                                                                               |   |   |
| Number                       | 5                                                                                 | 2                                                                                 | 6                                                                                 | 16                                                                                | 7                                                                                 | 14                                                                                |   |   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |   |   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              |   |   |
| Adj Flow Rate, veh/h         | 97                                                                                | 587                                                                               | 630                                                                               | 54                                                                                | 217                                                                               | 466                                                                               |   |   |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 |   |   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |   |   |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |   |
| Cap, veh/h                   | 124                                                                               | 1986                                                                              | 1459                                                                              | 125                                                                               | 578                                                                               | 515                                                                               |   |   |
| Arrive On Green              | 0.07                                                                              | 0.56                                                                              | 0.44                                                                              | 0.44                                                                              | 0.33                                                                              | 0.33                                                                              |   |   |
| Sat Flow, veh/h              | 1774                                                                              | 3632                                                                              | 3393                                                                              | 282                                                                               | 1774                                                                              | 1583                                                                              |   |   |
| Grp Volume(v), veh/h         | 97                                                                                | 587                                                                               | 337                                                                               | 347                                                                               | 217                                                                               | 466                                                                               |   |   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1770                                                                              | 1813                                                                              | 1774                                                                              | 1583                                                                              |   |   |
| Q Serve(g_s), s              | 4.8                                                                               | 7.9                                                                               | 11.8                                                                              | 11.9                                                                              | 8.5                                                                               | 25.3                                                                              |   |   |
| Cycle Q Clear(g_c), s        | 4.8                                                                               | 7.9                                                                               | 11.8                                                                              | 11.9                                                                              | 8.5                                                                               | 25.3                                                                              |   |   |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   | 0.16                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Lane Grp Cap(c), veh/h       | 124                                                                               | 1986                                                                              | 782                                                                               | 802                                                                               | 578                                                                               | 515                                                                               |   |   |
| V/C Ratio(X)                 | 0.78                                                                              | 0.30                                                                              | 0.43                                                                              | 0.43                                                                              | 0.38                                                                              | 0.90                                                                              |   |   |
| Avail Cap(c_a), veh/h        | 229                                                                               | 1986                                                                              | 782                                                                               | 802                                                                               | 775                                                                               | 691                                                                               |   |   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Uniform Delay (d), s/veh     | 41.2                                                                              | 10.4                                                                              | 17.3                                                                              | 17.3                                                                              | 23.3                                                                              | 29.0                                                                              |   |   |
| Incr Delay (d2), s/veh       | 10.1                                                                              | 0.4                                                                               | 1.7                                                                               | 1.7                                                                               | 0.4                                                                               | 12.5                                                                              |   |   |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |   |
| %ile BackOfQ(50%),veh/ln     | 2.7                                                                               | 3.9                                                                               | 6.1                                                                               | 6.3                                                                               | 4.2                                                                               | 21.2                                                                              |   |   |
| LnGrp Delay(d),s/veh         | 51.3                                                                              | 10.8                                                                              | 19.0                                                                              | 19.0                                                                              | 23.7                                                                              | 41.5                                                                              |   |   |
| LnGrp LOS                    | D                                                                                 | B                                                                                 | B                                                                                 | B                                                                                 | C                                                                                 | D                                                                                 |   |   |
| Approach Vol, veh/h          |                                                                                   | 684                                                                               | 684                                                                               |                                                                                   | 683                                                                               |                                                                                   |   |   |
| Approach Delay, s/veh        |                                                                                   | 16.5                                                                              | 19.0                                                                              |                                                                                   | 35.8                                                                              |                                                                                   |   |   |
| Approach LOS                 |                                                                                   | B                                                                                 | B                                                                                 |                                                                                   | D                                                                                 |                                                                                   |   |   |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8 |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |   |   |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 56.0                                                                              |                                                                                   | 34.0                                                                              | 10.7                                                                              | 45.3                                                                              |   |   |
| Change Period (Y+Rc), s      |                                                                                   | 5.5                                                                               |                                                                                   | * 4.7                                                                             | 4.4                                                                               | 5.5                                                                               |   |   |
| Max Green Setting (Gmax), s  |                                                                                   | 50.5                                                                              |                                                                                   | * 39                                                                              | 11.6                                                                              | 34.5                                                                              |   |   |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 9.9                                                                               |                                                                                   | 27.3                                                                              | 6.8                                                                               | 13.9                                                                              |   |   |
| Green Ext Time (p_c), s      |                                                                                   | 9.8                                                                               |                                                                                   | 2.0                                                                               | 0.1                                                                               | 8.0                                                                               |   |   |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 23.8                                                                              |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |   |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |

# HCM 2010 Signalized Intersection Summary

## 10: Bernardo Center Dr & West Bernardo Dr

3/24/2016

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| Movement                     | EBL                                                                               | EBT                                                                               | WBU                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                                 |      |
| Lane Configurations          |  |  |  |  |  |  |  |      |
| Traffic Volume (veh/h)       | 504                                                                               | 500                                                                               | 5                                                                                 | 480                                                                               | 485                                                                               | 430                                                                               | 579                                                                                 |      |
| Future Volume (veh/h)        | 504                                                                               | 500                                                                               | 5                                                                                 | 480                                                                               | 485                                                                               | 430                                                                               | 579                                                                                 |      |
| Number                       | 1                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 12                                                                                | 3                                                                                 | 18                                                                                  |      |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   |      |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              |                                                                                   | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                                |      |
| Adj Flow Rate, veh/h         | 536                                                                               | 532                                                                               |                                                                                   | 511                                                                               | 516                                                                               | 457                                                                               | 616                                                                                 |      |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                   |      |
| Peak Hour Factor             | 0.94                                                                              | 0.94                                                                              |                                                                                   | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                                |      |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   |      |
| Cap, veh/h                   | 657                                                                               | 1837                                                                              |                                                                                   | 958                                                                               | 1734                                                                              | 625                                                                               | 860                                                                                 |      |
| Arrive On Green              | 0.19                                                                              | 0.52                                                                              |                                                                                   | 0.27                                                                              | 0.27                                                                              | 0.35                                                                              | 0.35                                                                                |      |
| Sat Flow, veh/h              | 3442                                                                              | 3632                                                                              |                                                                                   | 3632                                                                              | 2782                                                                              | 1774                                                                              | 1583                                                                                |      |
| Grp Volume(v), veh/h         | 536                                                                               | 532                                                                               |                                                                                   | 511                                                                               | 516                                                                               | 457                                                                               | 616                                                                                 |      |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1770                                                                              |                                                                                   | 1770                                                                              | 1391                                                                              | 1774                                                                              | 1583                                                                                |      |
| Q Serve(g_s), s              | 11.5                                                                              | 6.5                                                                               |                                                                                   | 9.5                                                                               | 6.6                                                                               | 17.3                                                                              | 22.3                                                                                |      |
| Cycle Q Clear(g_c), s        | 11.5                                                                              | 6.5                                                                               |                                                                                   | 9.5                                                                               | 6.6                                                                               | 17.3                                                                              | 22.3                                                                                |      |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Lane Grp Cap(c), veh/h       | 657                                                                               | 1837                                                                              |                                                                                   | 958                                                                               | 1734                                                                              | 625                                                                               | 860                                                                                 |      |
| V/C Ratio(X)                 | 0.82                                                                              | 0.29                                                                              |                                                                                   | 0.53                                                                              | 0.30                                                                              | 0.73                                                                              | 0.72                                                                                |      |
| Avail Cap(c_a), veh/h        | 923                                                                               | 2289                                                                              |                                                                                   | 1497                                                                              | 2158                                                                              | 753                                                                               | 974                                                                                 |      |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Uniform Delay (d), s/veh     | 29.8                                                                              | 10.5                                                                              |                                                                                   | 23.9                                                                              | 6.7                                                                               | 21.7                                                                              | 13.1                                                                                |      |
| Incr Delay (d2), s/veh       | 4.0                                                                               | 0.1                                                                               |                                                                                   | 0.5                                                                               | 0.1                                                                               | 2.9                                                                               | 2.2                                                                                 |      |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 |      |
| %ile BackOfQ(50%),veh/ln     | 5.8                                                                               | 3.2                                                                               |                                                                                   | 4.7                                                                               | 2.5                                                                               | 8.9                                                                               | 10.1                                                                                |      |
| LnGrp Delay(d),s/veh         | 33.7                                                                              | 10.6                                                                              |                                                                                   | 24.3                                                                              | 6.8                                                                               | 24.7                                                                              | 15.3                                                                                |      |
| LnGrp LOS                    | C                                                                                 | B                                                                                 |                                                                                   | C                                                                                 | A                                                                                 | C                                                                                 | B                                                                                   |      |
| Approach Vol, veh/h          |                                                                                   | 1068                                                                              |                                                                                   | 1027                                                                              |                                                                                   | 1073                                                                              |                                                                                     |      |
| Approach Delay, s/veh        |                                                                                   | 22.2                                                                              |                                                                                   | 15.5                                                                              |                                                                                   | 19.3                                                                              |                                                                                     |      |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   | B                                                                                 |                                                                                   | B                                                                                 |                                                                                     |      |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8    |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                     | 8    |
| Phs Duration (G+Y+Rc), s     | 19.1                                                                              | 26.3                                                                              |                                                                                   |                                                                                   |                                                                                   | 45.4                                                                              |                                                                                     | 31.5 |
| Change Period (Y+Rc), s      | 4.4                                                                               | 5.5                                                                               |                                                                                   |                                                                                   |                                                                                   | * 5.5                                                                             |                                                                                     | 4.4  |
| Max Green Setting (Gmax), s  | 20.6                                                                              | 32.5                                                                              |                                                                                   |                                                                                   |                                                                                   | * 50                                                                              |                                                                                     | 32.6 |
| Max Q Clear Time (g_c+I1), s | 13.5                                                                              | 11.5                                                                              |                                                                                   |                                                                                   |                                                                                   | 8.5                                                                               |                                                                                     | 24.3 |
| Green Ext Time (p_c), s      | 1.2                                                                               | 9.2                                                                               |                                                                                   |                                                                                   |                                                                                   | 11.6                                                                              |                                                                                     | 2.7  |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 19.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |

## **APPENDIX J**

### **ENTITLED OFFICE DEVELOPMENT TRAFFIC VOLUMES AND PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS**

# HCM 2010 Signalized Intersection Summary

## 1: Camino San Bernardo & Rancho Bernardo Rd

3/7/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 0                                                                                 | 956                                                                               | 171                                                                               | 404                                                                               | 727                                                                               | 1                                                                                 | 37                                                                                 | 0                                                                                   | 200                                                                                 | 4                                                                                   | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 0                                                                                 | 956                                                                               | 171                                                                               | 404                                                                               | 727                                                                               | 1                                                                                 | 37                                                                                 | 0                                                                                   | 200                                                                                 | 4                                                                                   | 0                                                                                   | 0                                                                                   |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.98                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.98                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 1039                                                                              | 186                                                                               | 439                                                                               | 790                                                                               | 1                                                                                 | 40                                                                                 | 0                                                                                   | 217                                                                                 | 4                                                                                   | 0                                                                                   | 0                                                                                   |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                  | 2                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 3                                                                                 | 1268                                                                              | 226                                                                               | 548                                                                               | 2358                                                                              | 3                                                                                 | 418                                                                                | 327                                                                                 | 288                                                                                 | 169                                                                                 | 0                                                                                   | 0                                                                                   |
| Arrive On Green              | 0.00                                                                              | 0.42                                                                              | 0.42                                                                              | 0.16                                                                              | 0.65                                                                              | 0.65                                                                              | 0.18                                                                               | 0.00                                                                                | 0.18                                                                                | 0.18                                                                                | 0.00                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 2993                                                                              | 535                                                                               | 3442                                                                              | 3627                                                                              | 5                                                                                 | 1412                                                                               | 1770                                                                                | 1558                                                                                | 331                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Volume(v), veh/h         | 0                                                                                 | 613                                                                               | 612                                                                               | 439                                                                               | 385                                                                               | 406                                                                               | 40                                                                                 | 0                                                                                   | 217                                                                                 | 4                                                                                   | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1758                                                                              | 1721                                                                              | 1770                                                                              | 1862                                                                              | 1412                                                                               | 1770                                                                                | 1558                                                                                | 331                                                                                 | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.0                                                                               | 20.4                                                                              | 20.5                                                                              | 8.2                                                                               | 6.5                                                                               | 6.5                                                                               | 0.0                                                                                | 0.0                                                                                 | 8.8                                                                                 | 0.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 20.4                                                                              | 20.5                                                                              | 8.2                                                                               | 6.5                                                                               | 6.5                                                                               | 1.3                                                                                | 0.0                                                                                 | 8.8                                                                                 | 9.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.30                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.00                                                                                |
| Lane Grp Cap(c), veh/h       | 3                                                                                 | 749                                                                               | 745                                                                               | 548                                                                               | 1151                                                                              | 1211                                                                              | 418                                                                                | 327                                                                                 | 288                                                                                 | 169                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.00                                                                              | 0.82                                                                              | 0.82                                                                              | 0.80                                                                              | 0.33                                                                              | 0.33                                                                              | 0.10                                                                               | 0.00                                                                                | 0.75                                                                                | 0.02                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 133                                                                               | 871                                                                               | 866                                                                               | 656                                                                               | 1151                                                                              | 1211                                                                              | 772                                                                                | 770                                                                                 | 678                                                                                 | 459                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 16.9                                                                              | 17.0                                                                              | 27.0                                                                              | 5.2                                                                               | 5.2                                                                               | 22.7                                                                               | 0.0                                                                                 | 25.7                                                                                | 30.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 5.4                                                                               | 5.6                                                                               | 6.0                                                                               | 0.2                                                                               | 0.2                                                                               | 0.1                                                                                | 0.0                                                                                 | 4.0                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 11.0                                                                              | 11.0                                                                              | 4.4                                                                               | 3.2                                                                               | 3.3                                                                               | 0.6                                                                                | 0.0                                                                                 | 4.1                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 22.4                                                                              | 22.6                                                                              | 33.0                                                                              | 5.4                                                                               | 5.4                                                                               | 22.8                                                                               | 0.0                                                                                 | 29.7                                                                                | 30.1                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    |                                                                                   | C                                                                                 | C                                                                                 | C                                                                                 | A                                                                                 | A                                                                                 | C                                                                                  |                                                                                     | C                                                                                   | C                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1225                                                                              |                                                                                   |                                                                                   | 1230                                                                              |                                                                                   |                                                                                    | 257                                                                                 |                                                                                     |                                                                                     | 4                                                                                   |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 22.5                                                                              |                                                                                   |                                                                                   | 15.2                                                                              |                                                                                   |                                                                                    | 28.7                                                                                |                                                                                     |                                                                                     | 30.1                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 15.1                                                                              | 34.2                                                                              |                                                                                   | 17.3                                                                              | 0.0                                                                               | 49.3                                                                              |                                                                                    | 17.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 6.0                                                                               |                                                                                   | 5.0                                                                               | 4.5                                                                               | 6.0                                                                               |                                                                                    | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 12.7                                                                              | 32.8                                                                              |                                                                                   | 29.0                                                                              | 5.0                                                                               | 40.5                                                                              |                                                                                    | 29.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 10.2                                                                              | 22.5                                                                              |                                                                                   | 11.0                                                                              | 0.0                                                                               | 8.5                                                                               |                                                                                    | 10.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.4                                                                               | 5.7                                                                               |                                                                                   | 1.2                                                                               | 0.0                                                                               | 15.6                                                                              |                                                                                    | 1.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 19.8                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 2: Via Del Campo & Rancho Bernardo Rd

3/7/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 4                                                                                 | 971                                                                               | 302                                                                               | 600                                                                               | 1246                                                                              | 0                                                                                 | 59                                                                                 | 0                                                                                   | 53                                                                                  | 1                                                                                   | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 4                                                                                 | 971                                                                               | 302                                                                               | 600                                                                               | 1246                                                                              | 0                                                                                 | 59                                                                                 | 0                                                                                   | 53                                                                                  | 1                                                                                   | 0                                                                                   | 0                                                                                   |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.98                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.98                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1900                                                                               | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 4                                                                                 | 1091                                                                              | 339                                                                               | 674                                                                               | 1400                                                                              | 0                                                                                 | 66                                                                                 | 0                                                                                   | 60                                                                                  | 1                                                                                   | 0                                                                                   | 0                                                                                   |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 0                                                                                  | 1                                                                                   | 1                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                               | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 7                                                                                 | 1116                                                                              | 342                                                                               | 631                                                                               | 2733                                                                              | 0                                                                                 | 178                                                                                | 0                                                                                   | 100                                                                                 | 111                                                                                 | 0                                                                                   | 0                                                                                   |
| Arrive On Green              | 0.00                                                                              | 0.42                                                                              | 0.42                                                                              | 0.36                                                                              | 0.77                                                                              | 0.00                                                                              | 0.06                                                                               | 0.00                                                                                | 0.06                                                                                | 0.06                                                                                | 0.00                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 2653                                                                              | 814                                                                               | 1774                                                                              | 3632                                                                              | 0                                                                                 | 1615                                                                               | 0                                                                                   | 1559                                                                                | 582                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Volume(v), veh/h         | 4                                                                                 | 723                                                                               | 707                                                                               | 674                                                                               | 1400                                                                              | 0                                                                                 | 66                                                                                 | 0                                                                                   | 60                                                                                  | 1                                                                                   | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1697                                                                              | 1774                                                                              | 1770                                                                              | 0                                                                                 | 1615                                                                               | 0                                                                                   | 1559                                                                                | 582                                                                                 | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.2                                                                               | 38.9                                                                              | 40.3                                                                              | 34.6                                                                              | 14.5                                                                              | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 3.6                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.2                                                                               | 38.9                                                                              | 40.3                                                                              | 34.6                                                                              | 14.5                                                                              | 0.0                                                                               | 3.5                                                                                | 0.0                                                                                 | 3.6                                                                                 | 3.6                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.48                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.00                                                                                |
| Lane Grp Cap(c), veh/h       | 7                                                                                 | 744                                                                               | 714                                                                               | 631                                                                               | 2733                                                                              | 0                                                                                 | 178                                                                                | 0                                                                                   | 100                                                                                 | 111                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.54                                                                              | 0.97                                                                              | 0.99                                                                              | 1.07                                                                              | 0.51                                                                              | 0.00                                                                              | 0.37                                                                               | 0.00                                                                                | 0.60                                                                                | 0.01                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 73                                                                                | 744                                                                               | 714                                                                               | 631                                                                               | 2733                                                                              | 0                                                                                 | 507                                                                                | 0                                                                                   | 465                                                                                 | 428                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 48.3                                                                              | 27.6                                                                              | 28.0                                                                              | 31.3                                                                              | 4.2                                                                               | 0.0                                                                               | 44.2                                                                               | 0.0                                                                                 | 44.3                                                                                | 46.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 48.6                                                                              | 26.0                                                                              | 31.3                                                                              | 55.3                                                                              | 0.2                                                                               | 0.0                                                                               | 1.3                                                                                | 0.0                                                                                 | 5.6                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.2                                                                               | 24.2                                                                              | 24.9                                                                              | 26.5                                                                              | 7.1                                                                               | 0.0                                                                               | 1.8                                                                                | 0.0                                                                                 | 1.7                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 96.9                                                                              | 53.6                                                                              | 59.3                                                                              | 86.6                                                                              | 4.3                                                                               | 0.0                                                                               | 45.5                                                                               | 0.0                                                                                 | 49.9                                                                                | 46.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | F                                                                                 | D                                                                                 | E                                                                                 | F                                                                                 | A                                                                                 |                                                                                   | D                                                                                  |                                                                                     | D                                                                                   | D                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1434                                                                              |                                                                                   |                                                                                   | 2074                                                                              |                                                                                   |                                                                                    | 126                                                                                 |                                                                                     |                                                                                     | 1                                                                                   |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 56.5                                                                              |                                                                                   |                                                                                   | 31.1                                                                              |                                                                                   |                                                                                    | 47.6                                                                                |                                                                                     |                                                                                     | 46.0                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | E                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 39.0                                                                              | 46.8                                                                              |                                                                                   | 11.4                                                                              | 4.8                                                                               | 81.0                                                                              |                                                                                    | 11.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.4                                                                               | 5.9                                                                               |                                                                                   | * 5.2                                                                             | 4.4                                                                               | * 5.9                                                                             |                                                                                    | 5.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 34.6                                                                              | 40.9                                                                              |                                                                                   | * 29                                                                              | 4.0                                                                               | * 72                                                                              |                                                                                    | 29.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 36.6                                                                              | 42.3                                                                              |                                                                                   | 5.6                                                                               | 2.2                                                                               | 16.5                                                                              |                                                                                    | 5.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.5                                                                               | 0.0                                                                               | 36.3                                                                              |                                                                                    | 0.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 41.7                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# HCM 2010 Signalized Intersection Summary

## 3: Project Dwy/Matinal Rd & Rancho Bernardo Rd

3/7/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 33                                                                                | 784                                                                               | 107                                                                               | 329                                                                               | 1602                                                                              | 17                                                                                | 12                                                                                 | 1                                                                                   | 37                                                                                  | 84                                                                                  | 9                                                                                   | 141                                                                                 |
| Future Volume (veh/h)        | 33                                                                                | 784                                                                               | 107                                                                               | 329                                                                               | 1602                                                                              | 17                                                                                | 12                                                                                 | 1                                                                                   | 37                                                                                  | 84                                                                                  | 9                                                                                   | 141                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.98                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 38                                                                                | 901                                                                               | 123                                                                               | 378                                                                               | 1841                                                                              | 20                                                                                | 14                                                                                 | 1                                                                                   | 43                                                                                  | 97                                                                                  | 10                                                                                  | 162                                                                                 |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                  | 1                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.87                                                                              | 0.87                                                                              | 0.87                                                                              | 0.87                                                                              | 0.87                                                                              | 0.87                                                                              | 0.87                                                                               | 0.87                                                                                | 0.87                                                                                | 0.87                                                                                | 0.87                                                                                | 0.87                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 48                                                                                | 1300                                                                              | 177                                                                               | 414                                                                               | 2229                                                                              | 24                                                                                | 234                                                                                | 7                                                                                   | 319                                                                                 | 144                                                                                 | 23                                                                                  | 184                                                                                 |
| Arrive On Green              | 0.03                                                                              | 0.42                                                                              | 0.42                                                                              | 0.23                                                                              | 0.62                                                                              | 0.62                                                                              | 0.21                                                                               | 0.21                                                                                | 0.21                                                                                | 0.21                                                                                | 0.21                                                                                | 0.21                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 3130                                                                              | 427                                                                               | 1774                                                                              | 3587                                                                              | 39                                                                                | 1208                                                                               | 36                                                                                  | 1553                                                                                | 478                                                                                 | 113                                                                                 | 895                                                                                 |
| Grp Volume(v), veh/h         | 38                                                                                | 509                                                                               | 515                                                                               | 378                                                                               | 907                                                                               | 954                                                                               | 14                                                                                 | 0                                                                                   | 44                                                                                  | 269                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1787                                                                              | 1774                                                                              | 1770                                                                              | 1856                                                                              | 1208                                                                               | 0                                                                                   | 1589                                                                                | 1485                                                                                | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 2.3                                                                               | 25.3                                                                              | 25.3                                                                              | 22.2                                                                              | 42.6                                                                              | 42.9                                                                              | 0.0                                                                                | 0.0                                                                                 | 2.4                                                                                 | 16.4                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 2.3                                                                               | 25.3                                                                              | 25.3                                                                              | 22.2                                                                              | 42.6                                                                              | 42.9                                                                              | 1.6                                                                                | 0.0                                                                                 | 2.4                                                                                 | 18.8                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.24                                                                              | 1.00                                                                              |                                                                                   | 0.02                                                                              | 1.00                                                                               |                                                                                     | 0.98                                                                                | 0.36                                                                                |                                                                                     | 0.60                                                                                |
| Lane Grp Cap(c), veh/h       | 48                                                                                | 735                                                                               | 742                                                                               | 414                                                                               | 1100                                                                              | 1154                                                                              | 234                                                                                | 0                                                                                   | 327                                                                                 | 351                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.79                                                                              | 0.69                                                                              | 0.69                                                                              | 0.91                                                                              | 0.82                                                                              | 0.83                                                                              | 0.06                                                                               | 0.00                                                                                | 0.13                                                                                | 0.77                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 66                                                                                | 735                                                                               | 742                                                                               | 547                                                                               | 1206                                                                              | 1265                                                                              | 313                                                                                | 0                                                                                   | 430                                                                                 | 440                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 51.8                                                                              | 25.7                                                                              | 25.7                                                                              | 40.0                                                                              | 15.7                                                                              | 15.8                                                                              | 34.4                                                                               | 0.0                                                                                 | 34.7                                                                                | 41.3                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 34.5                                                                              | 2.8                                                                               | 2.8                                                                               | 16.6                                                                              | 4.4                                                                               | 4.3                                                                               | 0.1                                                                                | 0.0                                                                                 | 0.2                                                                                 | 6.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 1.6                                                                               | 12.9                                                                              | 13.0                                                                              | 12.8                                                                              | 22.0                                                                              | 23.1                                                                              | 0.3                                                                                | 0.0                                                                                 | 1.1                                                                                 | 8.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 86.3                                                                              | 28.5                                                                              | 28.5                                                                              | 56.6                                                                              | 20.2                                                                              | 20.1                                                                              | 34.5                                                                               | 0.0                                                                                 | 34.9                                                                                | 47.4                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | F                                                                                 | C                                                                                 | C                                                                                 | E                                                                                 | C                                                                                 | C                                                                                 | C                                                                                  |                                                                                     | C                                                                                   | D                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1062                                                                              |                                                                                   |                                                                                   | 2239                                                                              |                                                                                   |                                                                                    | 58                                                                                  |                                                                                     |                                                                                     | 269                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 30.6                                                                              |                                                                                   |                                                                                   | 26.3                                                                              |                                                                                   |                                                                                    | 34.8                                                                                |                                                                                     |                                                                                     | 47.4                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 29.0                                                                              | 51.5                                                                              |                                                                                   | 26.6                                                                              | 6.9                                                                               | 73.6                                                                              |                                                                                    | 26.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 7.0                                                                               |                                                                                   | 4.6                                                                               | 4.0                                                                               | * 7                                                                               |                                                                                    | * 4.6                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 33.0                                                                              | 43.0                                                                              |                                                                                   | 28.4                                                                              | 4.0                                                                               | * 73                                                                              |                                                                                    | * 29                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 24.2                                                                              | 27.3                                                                              |                                                                                   | 20.8                                                                              | 4.3                                                                               | 44.9                                                                              |                                                                                    | 4.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.8                                                                               | 13.6                                                                              |                                                                                   | 1.2                                                                               | 0.0                                                                               | 21.7                                                                              |                                                                                    | 2.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 29.3                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 4: West Bernardo Dr & Rancho Bernardo Rd

3/7/2016

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 44                                                                                | 668                                                                               | 79                                                                                | 566                                                                               | 1777                                                                              | 271                                                                               | 132                                                                                 | 86                                                                                  | 124                                                                                 | 643                                                                                 | 312                                                                                 | 177                                                                                 |
| Future Volume (veh/h)        | 44                                                                                | 668                                                                               | 79                                                                                | 566                                                                               | 1777                                                                              | 271                                                                               | 132                                                                                 | 86                                                                                  | 124                                                                                 | 643                                                                                 | 312                                                                                 | 177                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                   | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                                |                                                                                     | 0.99                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 45                                                                                | 689                                                                               | 81                                                                                | 584                                                                               | 1832                                                                              | 279                                                                               | 136                                                                                 | 89                                                                                  | 128                                                                                 | 663                                                                                 | 322                                                                                 | 182                                                                                 |
| Adj No. of Lanes             | 2                                                                                 | 3                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 | 1                                                                                 | 2                                                                                   | 2                                                                                   | 1                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 96                                                                                | 954                                                                               | 111                                                                               | 881                                                                               | 1589                                                                              | 701                                                                               | 213                                                                                 | 391                                                                                 | 578                                                                                 | 764                                                                                 | 595                                                                                 | 329                                                                                 |
| Arrive On Green              | 0.03                                                                              | 0.21                                                                              | 0.21                                                                              | 0.26                                                                              | 0.45                                                                              | 0.45                                                                              | 0.06                                                                                | 0.11                                                                                | 0.11                                                                                | 0.22                                                                                | 0.27                                                                                | 0.27                                                                                |
| Sat Flow, veh/h              | 3442                                                                              | 4619                                                                              | 539                                                                               | 3442                                                                              | 3539                                                                              | 1562                                                                              | 3442                                                                                | 3539                                                                                | 1561                                                                                | 3442                                                                                | 2197                                                                                | 1214                                                                                |
| Grp Volume(v), veh/h         | 45                                                                                | 504                                                                               | 266                                                                               | 584                                                                               | 1832                                                                              | 279                                                                               | 136                                                                                 | 89                                                                                  | 128                                                                                 | 663                                                                                 | 258                                                                                 | 246                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1695                                                                              | 1768                                                                              | 1721                                                                              | 1770                                                                              | 1562                                                                              | 1721                                                                                | 1770                                                                                | 1561                                                                                | 1721                                                                                | 1770                                                                                | 1642                                                                                |
| Q Serve(g_s), s              | 1.3                                                                               | 14.5                                                                              | 14.7                                                                              | 15.9                                                                              | 46.9                                                                              | 12.5                                                                              | 4.0                                                                                 | 2.4                                                                                 | 2.5                                                                                 | 19.4                                                                                | 13.0                                                                                | 13.4                                                                                |
| Cycle Q Clear(g_c), s        | 1.3                                                                               | 14.5                                                                              | 14.7                                                                              | 15.9                                                                              | 46.9                                                                              | 12.5                                                                              | 4.0                                                                                 | 2.4                                                                                 | 2.5                                                                                 | 19.4                                                                                | 13.0                                                                                | 13.4                                                                                |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.30                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.74                                                                                |
| Lane Grp Cap(c), veh/h       | 96                                                                                | 700                                                                               | 365                                                                               | 881                                                                               | 1589                                                                              | 701                                                                               | 213                                                                                 | 391                                                                                 | 578                                                                                 | 764                                                                                 | 479                                                                                 | 444                                                                                 |
| V/C Ratio(X)                 | 0.47                                                                              | 0.72                                                                              | 0.73                                                                              | 0.66                                                                              | 1.15                                                                              | 0.40                                                                              | 0.64                                                                                | 0.23                                                                                | 0.22                                                                                | 0.87                                                                                | 0.54                                                                                | 0.55                                                                                |
| Avail Cap(c_a), veh/h        | 132                                                                               | 1139                                                                              | 594                                                                               | 881                                                                               | 1589                                                                              | 701                                                                               | 1124                                                                                | 1325                                                                                | 990                                                                                 | 992                                                                                 | 595                                                                                 | 552                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 50.0                                                                              | 38.6                                                                              | 38.7                                                                              | 34.8                                                                              | 28.8                                                                              | 19.3                                                                              | 47.9                                                                                | 42.4                                                                                | 7.9                                                                                 | 39.2                                                                                | 32.5                                                                                | 32.7                                                                                |
| Incr Delay (d2), s/veh       | 3.5                                                                               | 1.4                                                                               | 2.8                                                                               | 1.9                                                                               | 76.5                                                                              | 0.4                                                                               | 3.2                                                                                 | 0.3                                                                                 | 0.2                                                                                 | 6.7                                                                                 | 0.9                                                                                 | 1.1                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.7                                                                               | 6.9                                                                               | 7.4                                                                               | 7.8                                                                               | 39.6                                                                              | 5.5                                                                               | 2.0                                                                                 | 1.2                                                                                 | 1.4                                                                                 | 9.9                                                                                 | 6.5                                                                                 | 6.2                                                                                 |
| LnGrp Delay(d),s/veh         | 53.5                                                                              | 40.0                                                                              | 41.5                                                                              | 36.7                                                                              | 105.2                                                                             | 19.7                                                                              | 51.0                                                                                | 42.7                                                                                | 8.1                                                                                 | 45.8                                                                                | 33.5                                                                                | 33.8                                                                                |
| LnGrp LOS                    | D                                                                                 | D                                                                                 | D                                                                                 | D                                                                                 | F                                                                                 | B                                                                                 | D                                                                                   | D                                                                                   | A                                                                                   | D                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 815                                                                               |                                                                                   |                                                                                   | 2695                                                                              |                                                                                   |                                                                                     | 353                                                                                 |                                                                                     |                                                                                     | 1167                                                                                |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 41.3                                                                              |                                                                                   |                                                                                   | 81.5                                                                              |                                                                                   |                                                                                     | 33.3                                                                                |                                                                                     |                                                                                     | 40.6                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 32.4                                                                              | 27.5                                                                              | 10.9                                                                              | 33.7                                                                              | 7.3                                                                               | 52.6                                                                              | 27.6                                                                                | 17.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.7                                                                               | * 5.9                                                                             | 4.4                                                                               | 5.4                                                                               | 4.4                                                                               | 5.7                                                                               | 4.4                                                                                 | 5.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 15.6                                                                              | * 35                                                                              | 34.1                                                                              | 35.1                                                                              | 4.0                                                                               | 46.9                                                                              | 30.1                                                                                | 39.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 17.9                                                                              | 16.7                                                                              | 6.0                                                                               | 15.4                                                                              | 3.3                                                                               | 48.9                                                                              | 21.4                                                                                | 4.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 4.9                                                                               | 0.4                                                                               | 4.1                                                                               | 0.0                                                                               | 0.0                                                                               | 1.8                                                                                 | 4.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 62.1                                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 5: I-15 SB Ramps & Rancho Bernardo Rd

3/7/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |                                                                                   |  |  |                                                                                    |                                                                                     |                                                                                     |  |                                                                                     |  |
| Traffic Volume (veh/h)       | 0                                                                                 | 789                                                                               | 589                                                                               | 0                                                                                 | 1428                                                                              | 505                                                                               | 0                                                                                  | 0                                                                                   | 0                                                                                   | 659                                                                                 | 0                                                                                   | 1230                                                                                |
| Future Volume (veh/h)        | 0                                                                                 | 789                                                                               | 589                                                                               | 0                                                                                 | 1428                                                                              | 505                                                                               | 0                                                                                  | 0                                                                                   | 0                                                                                   | 659                                                                                 | 0                                                                                   | 1230                                                                                |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                |                                                                                    |                                                                                     |                                                                                     | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 0                                                                                 | 1863                                                                              | 1863                                                                              | 0                                                                                 | 1863                                                                              | 1863                                                                              |                                                                                    |                                                                                     |                                                                                     | 1863                                                                                | 0                                                                                   | 1863                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 811                                                                               | 633                                                                               | 0                                                                                 | 1503                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 694                                                                                 | 0                                                                                   | 1295                                                                                |
| Adj No. of Lanes             | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 3                                                                                 | 1                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 2                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.95                                                                              | 0.95                                                                              | 0.92                                                                              | 0.95                                                                              | 0.95                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.95                                                                                | 0.92                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %         | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 0                                                                                 | 1546                                                                              | 1314                                                                              | 0                                                                                 | 2320                                                                              | 657                                                                               |                                                                                    |                                                                                     |                                                                                     | 1706                                                                                | 0                                                                                   | 1381                                                                                |
| Arrive On Green              | 0.00                                                                              | 0.42                                                                              | 0.42                                                                              | 0.00                                                                              | 0.55                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.50                                                                                | 0.00                                                                                | 0.50                                                                                |
| Sat Flow, veh/h              | 0                                                                                 | 3725                                                                              | 3167                                                                              | 0                                                                                 | 5588                                                                              | 1583                                                                              |                                                                                    |                                                                                     |                                                                                     | 3442                                                                                | 0                                                                                   | 2787                                                                                |
| Grp Volume(v), veh/h         | 0                                                                                 | 811                                                                               | 633                                                                               | 0                                                                                 | 1503                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 694                                                                                 | 0                                                                                   | 1295                                                                                |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1863                                                                              | 1583                                                                              | 0                                                                                 | 1863                                                                              | 1583                                                                              |                                                                                    |                                                                                     |                                                                                     | 1721                                                                                | 0                                                                                   | 1393                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 22.8                                                                              | 20.5                                                                              | 0.0                                                                               | 26.3                                                                              | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 17.8                                                                                | 0.0                                                                                 | 61.3                                                                                |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 22.8                                                                              | 20.5                                                                              | 0.0                                                                               | 26.3                                                                              | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 17.8                                                                                | 0.0                                                                                 | 61.3                                                                                |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 1.00                                                                              | 0.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 1546                                                                              | 1314                                                                              | 0                                                                                 | 2320                                                                              | 657                                                                               |                                                                                    |                                                                                     |                                                                                     | 1706                                                                                | 0                                                                                   | 1381                                                                                |
| V/C Ratio(X)                 | 0.00                                                                              | 0.52                                                                              | 0.48                                                                              | 0.00                                                                              | 0.65                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.41                                                                                | 0.00                                                                                | 0.94                                                                                |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 1546                                                                              | 1314                                                                              | 0                                                                                 | 2320                                                                              | 657                                                                               |                                                                                    |                                                                                     |                                                                                     | 1792                                                                                | 0                                                                                   | 1451                                                                                |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.33                                                                              | 1.33                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.00                                                                              | 0.63                                                                              | 0.63                                                                              | 0.00                                                                              | 0.81                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 30.6                                                                              | 29.9                                                                              | 0.0                                                                               | 24.2                                                                              | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 22.3                                                                                | 0.0                                                                                 | 33.3                                                                                |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.8                                                                               | 0.8                                                                               | 0.0                                                                               | 1.1                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.2                                                                                 | 0.0                                                                                 | 11.5                                                                                |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 11.9                                                                              | 9.1                                                                               | 0.0                                                                               | 13.6                                                                              | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 8.5                                                                                 | 0.0                                                                                 | 25.8                                                                                |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 31.4                                                                              | 30.7                                                                              | 0.0                                                                               | 25.4                                                                              | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 22.5                                                                                | 0.0                                                                                 | 44.8                                                                                |
| LnGrp LOS                    |                                                                                   | C                                                                                 | C                                                                                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     | C                                                                                   |                                                                                     | D                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 1444                                                                              |                                                                                   |                                                                                   | 1503                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 1989                                                                                |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 31.1                                                                              |                                                                                   |                                                                                   | 25.4                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 37.0                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 64.5                                                                              |                                                                                   | 75.5                                                                              |                                                                                   | 64.5                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 6.4                                                                               |                                                                                   | 6.1                                                                               |                                                                                   | 6.4                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 54.6                                                                              |                                                                                   | 72.9                                                                              |                                                                                   | 54.6                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 24.8                                                                              |                                                                                   | 63.3                                                                              |                                                                                   | 28.3                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 23.3                                                                              |                                                                                   | 6.1                                                                               |                                                                                   | 21.1                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 31.7                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 6: I-15 NB Ramps & Rancho Bernardo Rd

3/7/2016

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|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                                | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |                                                                                   |  |  |  |                                                                                     |  |                                                                                     |                                                                                     |                                                                                     |
| Traffic Volume (veh/h)       | 0                                                                                 | 843                                                                               | 606                                                                               | 0                                                                                 | 1138                                                                              | 285                                                                                | 796                                                                                | 0                                                                                   | 433                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 0                                                                                 | 843                                                                               | 606                                                                               | 0                                                                                 | 1138                                                                              | 285                                                                                | 796                                                                                | 0                                                                                   | 433                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                 | 3                                                                                  | 8                                                                                   | 18                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                  | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                               | 1.00                                                                               |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 0                                                                                 | 1863                                                                              | 1863                                                                              | 0                                                                                 | 1863                                                                              | 1863                                                                               | 1863                                                                               | 0                                                                                   | 1863                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Adj Flow Rate, veh/h         | 0                                                                                 | 897                                                                               | 0                                                                                 | 0                                                                                 | 1211                                                                              | 303                                                                                | 847                                                                                | 0                                                                                   | 461                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Adj No. of Lanes             | 0                                                                                 | 3                                                                                 | 1                                                                                 | 0                                                                                 | 3                                                                                 | 1                                                                                  | 2                                                                                  | 0                                                                                   | 2                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Peak Hour Factor             | 0.92                                                                              | 0.94                                                                              | 0.94                                                                              | 0.92                                                                              | 0.94                                                                              | 0.94                                                                               | 0.94                                                                               | 0.92                                                                                | 0.94                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Percent Heavy Veh, %         | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                  | 0                                                                                   | 2                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Cap, veh/h                   | 0                                                                                 | 3482                                                                              | 987                                                                               | 0                                                                                 | 3169                                                                              | 987                                                                                | 990                                                                                | 0                                                                                   | 801                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Arrive On Green              | 0.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 0.62                                                                              | 0.62                                                                               | 0.29                                                                               | 0.00                                                                                | 0.29                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Sat Flow, veh/h              | 0                                                                                 | 5588                                                                              | 1583                                                                              | 0                                                                                 | 5253                                                                              | 1583                                                                               | 3442                                                                               | 0                                                                                   | 2787                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Grp Volume(v), veh/h         | 0                                                                                 | 897                                                                               | 0                                                                                 | 0                                                                                 | 1211                                                                              | 303                                                                                | 847                                                                                | 0                                                                                   | 461                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1863                                                                              | 1583                                                                              | 0                                                                                 | 1695                                                                              | 1583                                                                               | 1721                                                                               | 0                                                                                   | 1393                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Q Serve(g_s), s              | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 16.5                                                                              | 12.5                                                                               | 32.6                                                                               | 0.0                                                                                 | 19.8                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 16.5                                                                              | 12.5                                                                               | 32.6                                                                               | 0.0                                                                                 | 19.8                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 1.00                                                                              | 0.00                                                                              |                                                                                   | 1.00                                                                               | 1.00                                                                               |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 3482                                                                              | 987                                                                               | 0                                                                                 | 3169                                                                              | 987                                                                                | 990                                                                                | 0                                                                                   | 801                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| V/C Ratio(X)                 | 0.00                                                                              | 0.26                                                                              | 0.00                                                                              | 0.00                                                                              | 0.38                                                                              | 0.31                                                                               | 0.86                                                                               | 0.00                                                                                | 0.58                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 3482                                                                              | 987                                                                               | 0                                                                                 | 3169                                                                              | 987                                                                                | 1423                                                                               | 0                                                                                   | 1152                                                                                |                                                                                     |                                                                                     |                                                                                     |
| HCM Platoon Ratio            | 1.00                                                                              | 2.00                                                                              | 2.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Upstream Filter(I)           | 0.00                                                                              | 0.84                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 13.1                                                                              | 12.3                                                                               | 47.1                                                                               | 0.0                                                                                 | 42.6                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.2                                                                               | 0.0                                                                               | 0.0                                                                               | 0.4                                                                               | 0.8                                                                                | 3.7                                                                                | 0.0                                                                                 | 0.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 7.7                                                                               | 5.7                                                                                | 16.0                                                                               | 0.0                                                                                 | 7.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 0.2                                                                               | 0.0                                                                               | 0.0                                                                               | 13.4                                                                              | 13.1                                                                               | 50.8                                                                               | 0.0                                                                                 | 43.2                                                                                |                                                                                     |                                                                                     |                                                                                     |
| LnGrp LOS                    |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 | B                                                                                  | D                                                                                  |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 897                                                                               |                                                                                   |                                                                                   | 1514                                                                              |                                                                                    |                                                                                    | 1308                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 0.2                                                                               |                                                                                   |                                                                                   | 13.3                                                                              |                                                                                    |                                                                                    | 48.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                    |                                                                                    | D                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                  | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                  |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 93.6                                                                              |                                                                                   |                                                                                   |                                                                                   | 93.6                                                                               |                                                                                    | 46.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 6.4                                                                               |                                                                                   |                                                                                   |                                                                                   | 6.4                                                                                |                                                                                    | 6.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 69.6                                                                              |                                                                                   |                                                                                   |                                                                                   | 69.6                                                                               |                                                                                    | 57.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 2.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 18.5                                                                               |                                                                                    | 34.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 30.3                                                                              |                                                                                   |                                                                                   |                                                                                   | 26.9                                                                               |                                                                                    | 5.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 22.4                                                                              |                                                                                   |                                                                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 7: Bernardo Center Dr & Rancho Bernardo Rd

3/7/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |                                                                                   |  |  |                                                                                     |  |  |  |
| Traffic Volume (veh/h)       | 321                                                                               | 598                                                                               | 301                                                                               | 163                                                                               | 848                                                                               | 85                                                                                | 267                                                                                | 188                                                                                 | 109                                                                                 | 185                                                                                 | 247                                                                                 | 120                                                                                 |
| Future Volume (veh/h)        | 321                                                                               | 598                                                                               | 301                                                                               | 163                                                                               | 848                                                                               | 85                                                                                | 267                                                                                | 188                                                                                 | 109                                                                                 | 185                                                                                 | 247                                                                                 | 120                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                               |                                                                                     | 0.99                                                                                | 1.00                                                                                |                                                                                     | 0.99                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h         | 345                                                                               | 646                                                                               | 322                                                                               | 175                                                                               | 912                                                                               | 91                                                                                | 287                                                                                | 202                                                                                 | 117                                                                                 | 199                                                                                 | 266                                                                                 | 129                                                                                 |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 | 1                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                  | 2                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                               | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 433                                                                               | 1558                                                                              | 662                                                                               | 255                                                                               | 1202                                                                              | 120                                                                               | 367                                                                                | 402                                                                                 | 222                                                                                 | 282                                                                                 | 562                                                                                 | 441                                                                                 |
| Arrive On Green              | 0.12                                                                              | 0.42                                                                              | 0.42                                                                              | 0.07                                                                              | 0.37                                                                              | 0.37                                                                              | 0.11                                                                               | 0.18                                                                                | 0.18                                                                                | 0.08                                                                                | 0.16                                                                                | 0.16                                                                                |
| Sat Flow, veh/h              | 3548                                                                              | 3725                                                                              | 1583                                                                              | 3442                                                                              | 3246                                                                              | 324                                                                               | 3442                                                                               | 2193                                                                                | 1214                                                                                | 3442                                                                                | 3539                                                                                | 1560                                                                                |
| Grp Volume(v), veh/h         | 345                                                                               | 646                                                                               | 322                                                                               | 175                                                                               | 497                                                                               | 506                                                                               | 287                                                                                | 161                                                                                 | 158                                                                                 | 199                                                                                 | 266                                                                                 | 129                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1721                                                                              | 1770                                                                              | 1800                                                                              | 1721                                                                               | 1770                                                                                | 1637                                                                                | 1721                                                                                | 1770                                                                                | 1560                                                                                |
| Q Serve(g_s), s              | 8.2                                                                               | 10.5                                                                              | 12.8                                                                              | 4.3                                                                               | 21.2                                                                              | 21.2                                                                              | 7.0                                                                                | 7.1                                                                                 | 7.5                                                                                 | 4.9                                                                                 | 5.9                                                                                 | 5.6                                                                                 |
| Cycle Q Clear(g_c), s        | 8.2                                                                               | 10.5                                                                              | 12.8                                                                              | 4.3                                                                               | 21.2                                                                              | 21.2                                                                              | 7.0                                                                                | 7.1                                                                                 | 7.5                                                                                 | 4.9                                                                                 | 5.9                                                                                 | 5.6                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.18                                                                              | 1.00                                                                               |                                                                                     | 0.74                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 433                                                                               | 1558                                                                              | 662                                                                               | 255                                                                               | 655                                                                               | 666                                                                               | 367                                                                                | 324                                                                                 | 300                                                                                 | 282                                                                                 | 562                                                                                 | 441                                                                                 |
| V/C Ratio(X)                 | 0.80                                                                              | 0.41                                                                              | 0.49                                                                              | 0.69                                                                              | 0.76                                                                              | 0.76                                                                              | 0.78                                                                               | 0.50                                                                                | 0.53                                                                                | 0.70                                                                                | 0.47                                                                                | 0.29                                                                                |
| Avail Cap(c_a), veh/h        | 543                                                                               | 1607                                                                              | 683                                                                               | 443                                                                               | 739                                                                               | 751                                                                               | 431                                                                                | 803                                                                                 | 742                                                                                 | 491                                                                                 | 1642                                                                                | 917                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 36.8                                                                              | 17.7                                                                              | 18.3                                                                              | 38.9                                                                              | 23.8                                                                              | 23.8                                                                              | 37.5                                                                               | 31.6                                                                                | 31.8                                                                                | 38.6                                                                                | 33.0                                                                                | 24.3                                                                                |
| Incr Delay (d2), s/veh       | 6.5                                                                               | 0.2                                                                               | 0.6                                                                               | 3.3                                                                               | 4.1                                                                               | 4.0                                                                               | 7.8                                                                                | 1.2                                                                                 | 1.4                                                                                 | 3.2                                                                                 | 0.6                                                                                 | 0.4                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 4.4                                                                               | 5.4                                                                               | 5.7                                                                               | 2.2                                                                               | 11.1                                                                              | 11.3                                                                              | 3.7                                                                                | 3.6                                                                                 | 3.5                                                                                 | 2.4                                                                                 | 2.9                                                                                 | 2.4                                                                                 |
| LnGrp Delay(d),s/veh         | 43.3                                                                              | 17.8                                                                              | 18.9                                                                              | 42.2                                                                              | 27.8                                                                              | 27.8                                                                              | 45.4                                                                               | 32.8                                                                                | 33.3                                                                                | 41.8                                                                                | 33.6                                                                                | 24.7                                                                                |
| LnGrp LOS                    | D                                                                                 | B                                                                                 | B                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                  | C                                                                                   | C                                                                                   | D                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h          | 1313                                                                              |                                                                                   |                                                                                   |                                                                                   | 1178                                                                              |                                                                                   |                                                                                    |                                                                                     | 606                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 24.8                                                                              |                                                                                   |                                                                                   |                                                                                   | 29.9                                                                              |                                                                                   |                                                                                    |                                                                                     | 38.9                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 10.8                                                                              | 42.3                                                                              | 13.6                                                                              | 19.6                                                                              | 14.9                                                                              | 38.1                                                                              | 11.5                                                                               | 21.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.4                                                                               | 6.2                                                                               | 4.4                                                                               | 5.9                                                                               | 4.4                                                                               | * 6.2                                                                             | 4.4                                                                                | * 5.9                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 11.1                                                                              | 37.2                                                                              | 10.8                                                                              | 40.0                                                                              | 13.2                                                                              | * 36                                                                              | 12.3                                                                               | * 39                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 6.3                                                                               | 14.8                                                                              | 9.0                                                                               | 7.9                                                                               | 10.2                                                                              | 23.2                                                                              | 6.9                                                                                | 9.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.2                                                                               | 12.6                                                                              | 0.2                                                                               | 4.1                                                                               | 0.4                                                                               | 8.7                                                                               | 0.3                                                                                | 4.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          | 30.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 8: West Bernardo Dr & Duenda Rd

3/7/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |                                                                                     |  |  |                                                                                     |
| Traffic Volume (veh/h)       | 20                                                                                | 170                                                                               | 153                                                                               | 102                                                                               | 51                                                                                | 40                                                                                | 31                                                                                 | 100                                                                                 | 74                                                                                  | 97                                                                                  | 218                                                                                 | 10                                                                                  |
| Future Volume (veh/h)        | 20                                                                                | 170                                                                               | 153                                                                               | 102                                                                               | 51                                                                                | 40                                                                                | 31                                                                                 | 100                                                                                 | 74                                                                                  | 97                                                                                  | 218                                                                                 | 10                                                                                  |
| Number                       | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                  | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 22                                                                                | 185                                                                               | 166                                                                               | 111                                                                               | 55                                                                                | 43                                                                                | 34                                                                                 | 109                                                                                 | 80                                                                                  | 105                                                                                 | 237                                                                                 | 11                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                  | 2                                                                                   | 0                                                                                   | 1                                                                                   | 2                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 464                                                                               | 235                                                                               | 211                                                                               | 189                                                                               | 198                                                                               | 169                                                                               | 54                                                                                 | 278                                                                                 | 189                                                                                 | 136                                                                                 | 634                                                                                 | 29                                                                                  |
| Arrive On Green              | 0.26                                                                              | 0.26                                                                              | 0.26                                                                              | 0.11                                                                              | 0.11                                                                              | 0.11                                                                              | 0.03                                                                               | 0.14                                                                                | 0.14                                                                                | 0.08                                                                                | 0.18                                                                                | 0.18                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 899                                                                               | 807                                                                               | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                               | 2018                                                                                | 1372                                                                                | 1774                                                                                | 3445                                                                                | 159                                                                                 |
| Grp Volume(v), veh/h         | 22                                                                                | 0                                                                                 | 351                                                                               | 111                                                                               | 55                                                                                | 43                                                                                | 34                                                                                 | 94                                                                                  | 95                                                                                  | 105                                                                                 | 121                                                                                 | 127                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 0                                                                                 | 1706                                                                              | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                               | 1770                                                                                | 1621                                                                                | 1774                                                                                | 1770                                                                                | 1835                                                                                |
| Q Serve(g_s), s              | 0.4                                                                               | 0.0                                                                               | 9.2                                                                               | 2.9                                                                               | 1.3                                                                               | 1.2                                                                               | 0.9                                                                                | 2.3                                                                                 | 2.6                                                                                 | 2.8                                                                                 | 2.9                                                                                 | 2.9                                                                                 |
| Cycle Q Clear(g_c), s        | 0.4                                                                               | 0.0                                                                               | 9.2                                                                               | 2.9                                                                               | 1.3                                                                               | 1.2                                                                               | 0.9                                                                                | 2.3                                                                                 | 2.6                                                                                 | 2.8                                                                                 | 2.9                                                                                 | 2.9                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.47                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.85                                                                                | 1.00                                                                                |                                                                                     | 0.09                                                                                |
| Lane Grp Cap(c), veh/h       | 464                                                                               | 0                                                                                 | 447                                                                               | 189                                                                               | 198                                                                               | 169                                                                               | 54                                                                                 | 244                                                                                 | 223                                                                                 | 136                                                                                 | 326                                                                                 | 338                                                                                 |
| V/C Ratio(X)                 | 0.05                                                                              | 0.00                                                                              | 0.79                                                                              | 0.59                                                                              | 0.28                                                                              | 0.25                                                                              | 0.63                                                                               | 0.39                                                                                | 0.42                                                                                | 0.77                                                                                | 0.37                                                                                | 0.38                                                                                |
| Avail Cap(c_a), veh/h        | 703                                                                               | 0                                                                                 | 676                                                                               | 777                                                                               | 816                                                                               | 694                                                                               | 185                                                                                | 739                                                                                 | 676                                                                                 | 370                                                                                 | 923                                                                                 | 957                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 13.2                                                                              | 0.0                                                                               | 16.4                                                                              | 20.4                                                                              | 19.7                                                                              | 19.7                                                                              | 23.0                                                                               | 18.8                                                                                | 18.9                                                                                | 21.7                                                                                | 17.1                                                                                | 17.1                                                                                |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.0                                                                               | 3.5                                                                               | 2.9                                                                               | 0.8                                                                               | 0.8                                                                               | 11.5                                                                               | 1.0                                                                                 | 1.3                                                                                 | 9.0                                                                                 | 0.7                                                                                 | 0.7                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.2                                                                               | 0.0                                                                               | 4.7                                                                               | 1.5                                                                               | 0.7                                                                               | 0.6                                                                               | 0.6                                                                                | 1.2                                                                                 | 1.2                                                                                 | 1.7                                                                                 | 1.5                                                                                 | 1.5                                                                                 |
| LnGrp Delay(d),s/veh         | 13.3                                                                              | 0.0                                                                               | 19.9                                                                              | 23.3                                                                              | 20.5                                                                              | 20.5                                                                              | 34.5                                                                               | 19.8                                                                                | 20.2                                                                                | 30.7                                                                                | 17.8                                                                                | 17.8                                                                                |
| LnGrp LOS                    | B                                                                                 |                                                                                   | B                                                                                 | C                                                                                 | C                                                                                 | C                                                                                 | C                                                                                  | B                                                                                   | C                                                                                   | C                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 373                                                                               |                                                                                   |                                                                                   | 209                                                                               |                                                                                   |                                                                                    | 223                                                                                 |                                                                                     |                                                                                     | 353                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 19.6                                                                              |                                                                                   |                                                                                   | 22.0                                                                              |                                                                                   |                                                                                    | 22.2                                                                                |                                                                                     |                                                                                     | 21.7                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 8.7                                                                               | 11.6                                                                              |                                                                                   | 17.5                                                                              | 6.5                                                                               | 13.8                                                                              |                                                                                    | 10.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |                                                                                    | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 10.0                                                                              | 20.0                                                                              |                                                                                   | 19.0                                                                              | 5.0                                                                               | 25.0                                                                              |                                                                                    | 21.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 4.8                                                                               | 4.6                                                                               |                                                                                   | 11.2                                                                              | 2.9                                                                               | 4.9                                                                               |                                                                                    | 4.9                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 2.1                                                                               |                                                                                   | 1.4                                                                               | 0.0                                                                               | 2.3                                                                               |                                                                                    | 0.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 21.1                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 9: West Bernardo Dr & Via Del Campo

3/7/2016

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| Movement                     | EBL                                                                               | EBT                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                               |   |   |
| Lane Configurations          |  |  |  |                                                                                   |  |  |   |   |
| Traffic Volume (veh/h)       | 401                                                                               | 514                                                                               | 273                                                                               | 150                                                                               | 47                                                                                | 49                                                                                |   |   |
| Future Volume (veh/h)        | 401                                                                               | 514                                                                               | 273                                                                               | 150                                                                               | 47                                                                                | 49                                                                                |   |   |
| Number                       | 5                                                                                 | 2                                                                                 | 6                                                                                 | 16                                                                                | 7                                                                                 | 14                                                                                |   |   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |   |   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              |   |   |
| Adj Flow Rate, veh/h         | 472                                                                               | 605                                                                               | 321                                                                               | 176                                                                               | 55                                                                                | 58                                                                                |   |   |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 |   |   |
| Peak Hour Factor             | 0.85                                                                              | 0.85                                                                              | 0.85                                                                              | 0.85                                                                              | 0.85                                                                              | 0.85                                                                              |   |   |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |   |
| Cap, veh/h                   | 938                                                                               | 2819                                                                              | 423                                                                               | 227                                                                               | 107                                                                               | 95                                                                                |   |   |
| Arrive On Green              | 0.53                                                                              | 0.80                                                                              | 0.19                                                                              | 0.19                                                                              | 0.06                                                                              | 0.06                                                                              |   |   |
| Sat Flow, veh/h              | 1774                                                                              | 3632                                                                              | 2318                                                                              | 1193                                                                              | 1774                                                                              | 1583                                                                              |   |   |
| Grp Volume(v), veh/h         | 472                                                                               | 605                                                                               | 254                                                                               | 243                                                                               | 55                                                                                | 58                                                                                |   |   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1770                                                                              | 1648                                                                              | 1774                                                                              | 1583                                                                              |   |   |
| Q Serve(g_s), s              | 12.2                                                                              | 3.0                                                                               | 9.7                                                                               | 10.0                                                                              | 2.1                                                                               | 2.5                                                                               |   |   |
| Cycle Q Clear(g_c), s        | 12.2                                                                              | 3.0                                                                               | 9.7                                                                               | 10.0                                                                              | 2.1                                                                               | 2.5                                                                               |   |   |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   | 0.72                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Lane Grp Cap(c), veh/h       | 938                                                                               | 2819                                                                              | 337                                                                               | 314                                                                               | 107                                                                               | 95                                                                                |   |   |
| V/C Ratio(X)                 | 0.50                                                                              | 0.21                                                                              | 0.75                                                                              | 0.78                                                                              | 0.51                                                                              | 0.61                                                                              |   |   |
| Avail Cap(c_a), veh/h        | 938                                                                               | 2819                                                                              | 460                                                                               | 428                                                                               | 576                                                                               | 514                                                                               |   |   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Uniform Delay (d), s/veh     | 10.8                                                                              | 1.8                                                                               | 27.2                                                                              | 27.4                                                                              | 32.4                                                                              | 32.6                                                                              |   |   |
| Incr Delay (d2), s/veh       | 0.4                                                                               | 0.2                                                                               | 4.7                                                                               | 6.0                                                                               | 3.8                                                                               | 6.1                                                                               |   |   |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |   |
| %ile BackOfQ(50%),veh/ln     | 6.0                                                                               | 1.5                                                                               | 5.2                                                                               | 5.0                                                                               | 1.2                                                                               | 2.4                                                                               |   |   |
| LnGrp Delay(d),s/veh         | 11.2                                                                              | 2.0                                                                               | 31.9                                                                              | 33.4                                                                              | 36.2                                                                              | 38.8                                                                              |   |   |
| LnGrp LOS                    | B                                                                                 | A                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | D                                                                                 |   |   |
| Approach Vol, veh/h          |                                                                                   | 1077                                                                              | 497                                                                               |                                                                                   | 113                                                                               |                                                                                   |   |   |
| Approach Delay, s/veh        |                                                                                   | 6.0                                                                               | 32.6                                                                              |                                                                                   | 37.5                                                                              |                                                                                   |   |   |
| Approach LOS                 |                                                                                   | A                                                                                 | C                                                                                 |                                                                                   | D                                                                                 |                                                                                   |   |   |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8 |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |   |   |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 62.2                                                                              |                                                                                   | 9.0                                                                               | 43.2                                                                              | 19.0                                                                              |   |   |
| Change Period (Y+Rc), s      |                                                                                   | 5.5                                                                               |                                                                                   | * 4.7                                                                             | 5.5                                                                               | * 5.5                                                                             |   |   |
| Max Green Setting (Gmax), s  |                                                                                   | 56.7                                                                              |                                                                                   | * 23                                                                              | 33.8                                                                              | * 19                                                                              |   |   |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 5.0                                                                               |                                                                                   | 4.5                                                                               | 14.2                                                                              | 12.0                                                                              |   |   |
| Green Ext Time (p_c), s      |                                                                                   | 6.2                                                                               |                                                                                   | 0.3                                                                               | 5.3                                                                               | 1.5                                                                               |   |   |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 16.0                                                                              |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |   |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |



# HCM 2010 Signalized Intersection Summary

## 10: Bernardo Center Dr & West Bernardo Dr

3/7/2016

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| Movement                     | EBL                                                                               | EBT                                                                               | WBU                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                                 |      |
| Lane Configurations          |  |  |  |  |  |  |  |      |
| Traffic Volume (veh/h)       | 623                                                                               | 450                                                                               | 0                                                                                 | 484                                                                               | 704                                                                               | 58                                                                                | 189                                                                                 |      |
| Future Volume (veh/h)        | 623                                                                               | 450                                                                               | 0                                                                                 | 484                                                                               | 704                                                                               | 58                                                                                | 189                                                                                 |      |
| Number                       | 1                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 12                                                                                | 3                                                                                 | 18                                                                                  |      |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   |      |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.97                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              |                                                                                   | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                                |      |
| Adj Flow Rate, veh/h         | 700                                                                               | 506                                                                               |                                                                                   | 544                                                                               | 791                                                                               | 65                                                                                | 212                                                                                 |      |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                   |      |
| Peak Hour Factor             | 0.89                                                                              | 0.89                                                                              |                                                                                   | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                                |      |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   |      |
| Cap, veh/h                   | 856                                                                               | 2590                                                                              |                                                                                   | 789                                                                               | 1522                                                                              | 237                                                                               | 605                                                                                 |      |
| Arrive On Green              | 0.25                                                                              | 0.73                                                                              |                                                                                   | 0.42                                                                              | 0.42                                                                              | 0.13                                                                              | 0.13                                                                                |      |
| Sat Flow, veh/h              | 3442                                                                              | 3632                                                                              |                                                                                   | 1863                                                                              | 2716                                                                              | 1774                                                                              | 1583                                                                                |      |
| Grp Volume(v), veh/h         | 700                                                                               | 506                                                                               |                                                                                   | 544                                                                               | 791                                                                               | 65                                                                                | 212                                                                                 |      |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1770                                                                              |                                                                                   | 1863                                                                              | 1358                                                                              | 1774                                                                              | 1583                                                                                |      |
| Q Serve(g_s), s              | 14.1                                                                              | 3.3                                                                               |                                                                                   | 17.5                                                                              | 13.4                                                                              | 2.4                                                                               | 7.0                                                                                 |      |
| Cycle Q Clear(g_c), s        | 14.1                                                                              | 3.3                                                                               |                                                                                   | 17.5                                                                              | 13.4                                                                              | 2.4                                                                               | 7.0                                                                                 |      |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Lane Grp Cap(c), veh/h       | 856                                                                               | 2590                                                                              |                                                                                   | 789                                                                               | 1522                                                                              | 237                                                                               | 605                                                                                 |      |
| V/C Ratio(X)                 | 0.82                                                                              | 0.20                                                                              |                                                                                   | 0.69                                                                              | 0.52                                                                              | 0.27                                                                              | 0.35                                                                                |      |
| Avail Cap(c_a), veh/h        | 1337                                                                              | 3333                                                                              |                                                                                   | 1116                                                                              | 2000                                                                              | 795                                                                               | 1104                                                                                |      |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Uniform Delay (d), s/veh     | 26.1                                                                              | 3.1                                                                               |                                                                                   | 17.3                                                                              | 10.2                                                                              | 28.7                                                                              | 16.2                                                                                |      |
| Incr Delay (d2), s/veh       | 2.3                                                                               | 0.0                                                                               |                                                                                   | 1.1                                                                               | 0.3                                                                               | 0.6                                                                               | 0.3                                                                                 |      |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 |      |
| %ile BackOfQ(50%),veh/ln     | 7.0                                                                               | 1.6                                                                               |                                                                                   | 9.2                                                                               | 5.0                                                                               | 1.2                                                                               | 3.1                                                                                 |      |
| LnGrp Delay(d),s/veh         | 28.4                                                                              | 3.1                                                                               |                                                                                   | 18.4                                                                              | 10.5                                                                              | 29.3                                                                              | 16.6                                                                                |      |
| LnGrp LOS                    | C                                                                                 | A                                                                                 |                                                                                   | B                                                                                 | B                                                                                 | C                                                                                 | B                                                                                   |      |
| Approach Vol, veh/h          |                                                                                   | 1206                                                                              |                                                                                   | 1335                                                                              |                                                                                   | 277                                                                               |                                                                                     |      |
| Approach Delay, s/veh        |                                                                                   | 17.8                                                                              |                                                                                   | 13.7                                                                              |                                                                                   | 19.5                                                                              |                                                                                     |      |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   | B                                                                                 |                                                                                   | B                                                                                 |                                                                                     |      |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8    |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                     | 8    |
| Phs Duration (G+Y+Rc), s     | 22.7                                                                              | 36.7                                                                              |                                                                                   |                                                                                   |                                                                                   | 59.4                                                                              |                                                                                     | 14.2 |
| Change Period (Y+Rc), s      | 4.4                                                                               | 5.5                                                                               |                                                                                   |                                                                                   |                                                                                   | * 5.5                                                                             |                                                                                     | 4.4  |
| Max Green Setting (Gmax), s  | 28.6                                                                              | 44.1                                                                              |                                                                                   |                                                                                   |                                                                                   | * 69                                                                              |                                                                                     | 33.0 |
| Max Q Clear Time (g_c+I1), s | 16.1                                                                              | 19.5                                                                              |                                                                                   |                                                                                   |                                                                                   | 5.3                                                                               |                                                                                     | 9.0  |
| Green Ext Time (p_c), s      | 2.2                                                                               | 11.7                                                                              |                                                                                   |                                                                                   |                                                                                   | 15.4                                                                              |                                                                                     | 0.8  |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 16.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |

# HCM 2010 Signalized Intersection Summary

## 1: Camino San Bernardo & Rancho Bernardo Rd

3/7/2016

|                              |  |  |  |  |  |  |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 1                                                                                 | 952                                                                               | 208                                                                               | 365                                                                               | 793                                                                               | 0                                                                                 | 109                                                                                 | 0                                                                                   | 318                                                                                 | 3                                                                                   | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 1                                                                                 | 952                                                                               | 208                                                                               | 365                                                                               | 793                                                                               | 0                                                                                 | 109                                                                                 | 0                                                                                   | 318                                                                                 | 3                                                                                   | 0                                                                                   | 0                                                                                   |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                   | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 1                                                                                 | 992                                                                               | 217                                                                               | 380                                                                               | 826                                                                               | 0                                                                                 | 114                                                                                 | 0                                                                                   | 331                                                                                 | 3                                                                                   | 0                                                                                   | 0                                                                                   |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                   | 2                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 2                                                                                 | 1219                                                                              | 266                                                                               | 465                                                                               | 1970                                                                              | 0                                                                                 | 523                                                                                 | 446                                                                                 | 398                                                                                 | 151                                                                                 | 0                                                                                   | 0                                                                                   |
| Arrive On Green              | 0.00                                                                              | 0.42                                                                              | 0.42                                                                              | 0.14                                                                              | 0.56                                                                              | 0.00                                                                              | 0.25                                                                                | 0.00                                                                                | 0.25                                                                                | 0.25                                                                                | 0.00                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 2882                                                                              | 629                                                                               | 3442                                                                              | 3632                                                                              | 0                                                                                 | 1412                                                                                | 1770                                                                                | 1581                                                                                | 223                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Volume(v), veh/h         | 1                                                                                 | 608                                                                               | 601                                                                               | 380                                                                               | 826                                                                               | 0                                                                                 | 114                                                                                 | 0                                                                                   | 331                                                                                 | 3                                                                                   | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1741                                                                              | 1721                                                                              | 1770                                                                              | 0                                                                                 | 1412                                                                                | 1770                                                                                | 1581                                                                                | 223                                                                                 | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.0                                                                               | 23.1                                                                              | 23.2                                                                              | 8.2                                                                               | 10.3                                                                              | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 15.1                                                                                | 0.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 23.1                                                                              | 23.2                                                                              | 8.2                                                                               | 10.3                                                                              | 0.0                                                                               | 3.9                                                                                 | 0.0                                                                                 | 15.1                                                                                | 15.3                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.36                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.00                                                                                |
| Lane Grp Cap(c), veh/h       | 2                                                                                 | 748                                                                               | 736                                                                               | 465                                                                               | 1970                                                                              | 0                                                                                 | 523                                                                                 | 446                                                                                 | 398                                                                                 | 151                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.41                                                                              | 0.81                                                                              | 0.82                                                                              | 0.82                                                                              | 0.42                                                                              | 0.00                                                                              | 0.22                                                                                | 0.00                                                                                | 0.83                                                                                | 0.02                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 116                                                                               | 824                                                                               | 810                                                                               | 496                                                                               | 1970                                                                              | 0                                                                                 | 704                                                                                 | 673                                                                                 | 601                                                                                 | 285                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 0.00                                                                              | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 38.1                                                                              | 19.4                                                                              | 19.4                                                                              | 32.1                                                                              | 9.8                                                                               | 0.0                                                                               | 22.8                                                                                | 0.0                                                                                 | 27.0                                                                                | 34.2                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 84.2                                                                              | 5.8                                                                               | 6.0                                                                               | 9.8                                                                               | 0.1                                                                               | 0.0                                                                               | 0.2                                                                                 | 0.0                                                                                 | 6.1                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.1                                                                               | 12.4                                                                              | 12.2                                                                              | 4.5                                                                               | 5.0                                                                               | 0.0                                                                               | 1.9                                                                                 | 0.0                                                                                 | 7.2                                                                                 | 0.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 122.3                                                                             | 25.1                                                                              | 25.4                                                                              | 41.8                                                                              | 9.9                                                                               | 0.0                                                                               | 23.0                                                                                | 0.0                                                                                 | 33.1                                                                                | 34.3                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | F                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | A                                                                                 |                                                                                   | C                                                                                   |                                                                                     | C                                                                                   | C                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1210                                                                              |                                                                                   |                                                                                   | 1206                                                                              |                                                                                   |                                                                                     | 445                                                                                 |                                                                                     |                                                                                     | 3                                                                                   |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 25.3                                                                              |                                                                                   |                                                                                   | 20.0                                                                              |                                                                                   |                                                                                     | 30.5                                                                                |                                                                                     |                                                                                     | 34.3                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                     | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 14.3                                                                              | 37.8                                                                              |                                                                                   | 24.2                                                                              | 4.1                                                                               | 48.0                                                                              |                                                                                     | 24.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 5.5                                                                               |                                                                                   | 5.0                                                                               | 4.0                                                                               | 5.5                                                                               |                                                                                     | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 11.0                                                                              | 35.5                                                                              |                                                                                   | 29.0                                                                              | 5.0                                                                               | 41.5                                                                              |                                                                                     | 29.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 10.2                                                                              | 25.2                                                                              |                                                                                   | 17.3                                                                              | 2.0                                                                               | 12.3                                                                              |                                                                                     | 17.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 7.1                                                                               |                                                                                   | 1.8                                                                               | 0.0                                                                               | 15.8                                                                              |                                                                                     | 1.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 23.9                                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 2: Via Del Campo & Rancho Bernardo Rd

3/7/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 6                                                                                 | 1341                                                                              | 49                                                                                | 52                                                                                | 995                                                                               | 1                                                                                 | 276                                                                                | 0                                                                                   | 349                                                                                 | 1                                                                                   | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 6                                                                                 | 1341                                                                              | 49                                                                                | 52                                                                                | 995                                                                               | 1                                                                                 | 276                                                                                | 0                                                                                   | 349                                                                                 | 1                                                                                   | 0                                                                                   | 0                                                                                   |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.98                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1900                                                                               | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 7                                                                                 | 1474                                                                              | 54                                                                                | 57                                                                                | 1093                                                                              | 1                                                                                 | 303                                                                                | 0                                                                                   | 384                                                                                 | 1                                                                                   | 0                                                                                   | 0                                                                                   |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 0                                                                                  | 1                                                                                   | 1                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                              | 0.91                                                                               | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                | 0.91                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 13                                                                                | 1688                                                                              | 62                                                                                | 73                                                                                | 1881                                                                              | 2                                                                                 | 544                                                                                | 0                                                                                   | 444                                                                                 | 225                                                                                 | 0                                                                                   | 0                                                                                   |
| Arrive On Green              | 0.01                                                                              | 0.48                                                                              | 0.48                                                                              | 0.04                                                                              | 0.52                                                                              | 0.52                                                                              | 0.28                                                                               | 0.00                                                                                | 0.28                                                                                | 0.28                                                                                | 0.00                                                                                | 0.00                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 3483                                                                              | 127                                                                               | 1774                                                                              | 3628                                                                              | 3                                                                                 | 1600                                                                               | 0                                                                                   | 1558                                                                                | 480                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Volume(v), veh/h         | 7                                                                                 | 748                                                                               | 780                                                                               | 57                                                                                | 533                                                                               | 561                                                                               | 303                                                                                | 0                                                                                   | 384                                                                                 | 1                                                                                   | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1840                                                                              | 1774                                                                              | 1770                                                                              | 1862                                                                              | 1600                                                                               | 0                                                                                   | 1558                                                                                | 480                                                                                 | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.3                                                                               | 30.8                                                                              | 31.0                                                                              | 2.6                                                                               | 17.0                                                                              | 17.0                                                                              | 0.0                                                                                | 0.0                                                                                 | 19.1                                                                                | 0.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.3                                                                               | 30.8                                                                              | 31.0                                                                              | 2.6                                                                               | 17.0                                                                              | 17.0                                                                              | 12.0                                                                               | 0.0                                                                                 | 19.1                                                                                | 12.1                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.07                                                                              | 1.00                                                                              |                                                                                   | 0.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.00                                                                                |
| Lane Grp Cap(c), veh/h       | 13                                                                                | 858                                                                               | 892                                                                               | 73                                                                                | 917                                                                               | 965                                                                               | 544                                                                                | 0                                                                                   | 444                                                                                 | 225                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.55                                                                              | 0.87                                                                              | 0.88                                                                              | 0.79                                                                              | 0.58                                                                              | 0.58                                                                              | 0.56                                                                               | 0.00                                                                                | 0.87                                                                                | 0.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 87                                                                                | 892                                                                               | 928                                                                               | 89                                                                                | 917                                                                               | 965                                                                               | 646                                                                                | 0                                                                                   | 557                                                                                 | 301                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 40.4                                                                              | 18.8                                                                              | 18.8                                                                              | 38.8                                                                              | 13.6                                                                              | 13.6                                                                              | 25.2                                                                               | 0.0                                                                                 | 27.7                                                                                | 30.4                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 32.0                                                                              | 9.2                                                                               | 9.1                                                                               | 30.3                                                                              | 0.9                                                                               | 0.9                                                                               | 0.9                                                                                | 0.0                                                                                 | 11.3                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.3                                                                               | 17.1                                                                              | 17.9                                                                              | 1.9                                                                               | 8.4                                                                               | 8.8                                                                               | 6.0                                                                                | 0.0                                                                                 | 9.5                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 72.4                                                                              | 27.9                                                                              | 28.0                                                                              | 69.1                                                                              | 14.5                                                                              | 14.4                                                                              | 26.1                                                                               | 0.0                                                                                 | 39.0                                                                                | 30.4                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | E                                                                                 | C                                                                                 | C                                                                                 | E                                                                                 | B                                                                                 | B                                                                                 | C                                                                                  |                                                                                     | D                                                                                   | C                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1535                                                                              |                                                                                   |                                                                                   | 1151                                                                              |                                                                                   |                                                                                    | 687                                                                                 |                                                                                     |                                                                                     | 1                                                                                   |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 28.2                                                                              |                                                                                   |                                                                                   | 17.2                                                                              |                                                                                   |                                                                                    | 33.3                                                                                |                                                                                     |                                                                                     | 30.4                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 7.7                                                                               | 45.5                                                                              |                                                                                   | 28.5                                                                              | 5.0                                                                               | 48.2                                                                              |                                                                                    | 28.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.4                                                                               | 5.9                                                                               |                                                                                   | * 5.2                                                                             | 4.4                                                                               | * 5.9                                                                             |                                                                                    | 5.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 4.1                                                                               | 41.2                                                                              |                                                                                   | * 30                                                                              | 4.0                                                                               | * 42                                                                              |                                                                                    | 29.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 4.6                                                                               | 33.0                                                                              |                                                                                   | 14.1                                                                              | 2.3                                                                               | 19.0                                                                              |                                                                                    | 21.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 6.6                                                                               |                                                                                   | 3.0                                                                               | 0.0                                                                               | 16.9                                                                              |                                                                                    | 2.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 25.5                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 3: Project Dwy/Matinal Rd & Rancho Bernardo Rd

3/7/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 109                                                                               | 1477                                                                              | 25                                                                                | 79                                                                                | 862                                                                               | 48                                                                                | 102                                                                                | 9                                                                                   | 315                                                                                 | 41                                                                                  | 2                                                                                   | 105                                                                                 |
| Future Volume (veh/h)        | 109                                                                               | 1477                                                                              | 25                                                                                | 79                                                                                | 862                                                                               | 48                                                                                | 102                                                                                | 9                                                                                   | 315                                                                                 | 41                                                                                  | 2                                                                                   | 105                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.99                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 121                                                                               | 1641                                                                              | 28                                                                                | 88                                                                                | 958                                                                               | 53                                                                                | 113                                                                                | 10                                                                                  | 350                                                                                 | 46                                                                                  | 2                                                                                   | 117                                                                                 |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                  | 1                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                               | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 153                                                                               | 1679                                                                              | 29                                                                                | 101                                                                               | 1510                                                                              | 84                                                                                | 285                                                                                | 13                                                                                  | 453                                                                                 | 85                                                                                  | 29                                                                                  | 151                                                                                 |
| Arrive On Green              | 0.09                                                                              | 0.47                                                                              | 0.47                                                                              | 0.06                                                                              | 0.44                                                                              | 0.44                                                                              | 0.29                                                                               | 0.29                                                                                | 0.29                                                                                | 0.29                                                                                | 0.29                                                                                | 0.29                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 3561                                                                              | 61                                                                                | 1774                                                                              | 3410                                                                              | 189                                                                               | 1268                                                                               | 44                                                                                  | 1546                                                                                | 112                                                                                 | 100                                                                                 | 515                                                                                 |
| Grp Volume(v), veh/h         | 121                                                                               | 814                                                                               | 855                                                                               | 88                                                                                | 497                                                                               | 514                                                                               | 113                                                                                | 0                                                                                   | 360                                                                                 | 165                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1852                                                                              | 1774                                                                              | 1770                                                                              | 1829                                                                              | 1268                                                                               | 0                                                                                   | 1590                                                                                | 726                                                                                 | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 5.9                                                                               | 39.4                                                                              | 39.7                                                                              | 4.3                                                                               | 19.1                                                                              | 19.1                                                                              | 0.0                                                                                | 0.0                                                                                 | 18.1                                                                                | 4.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 5.9                                                                               | 39.4                                                                              | 39.7                                                                              | 4.3                                                                               | 19.1                                                                              | 19.1                                                                              | 14.4                                                                               | 0.0                                                                                 | 18.1                                                                                | 22.2                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.03                                                                              | 1.00                                                                              |                                                                                   | 0.10                                                                              | 1.00                                                                               |                                                                                     | 0.97                                                                                | 0.28                                                                                |                                                                                     | 0.71                                                                                |
| Lane Grp Cap(c), veh/h       | 153                                                                               | 835                                                                               | 873                                                                               | 101                                                                               | 783                                                                               | 810                                                                               | 285                                                                                | 0                                                                                   | 466                                                                                 | 265                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.79                                                                              | 0.98                                                                              | 0.98                                                                              | 0.87                                                                              | 0.63                                                                              | 0.63                                                                              | 0.40                                                                               | 0.00                                                                                | 0.77                                                                                | 0.62                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 243                                                                               | 835                                                                               | 873                                                                               | 101                                                                               | 783                                                                               | 810                                                                               | 328                                                                                | 0                                                                                   | 521                                                                                 | 303                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 39.3                                                                              | 22.6                                                                              | 22.7                                                                              | 41.0                                                                              | 18.9                                                                              | 18.9                                                                              | 27.0                                                                               | 0.0                                                                                 | 28.3                                                                                | 28.2                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 8.9                                                                               | 25.2                                                                              | 25.2                                                                              | 50.4                                                                              | 1.7                                                                               | 1.6                                                                               | 0.9                                                                                | 0.0                                                                                 | 6.4                                                                                 | 3.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 3.2                                                                               | 24.8                                                                              | 26.3                                                                              | 3.5                                                                               | 9.6                                                                               | 9.9                                                                               | 2.5                                                                                | 0.0                                                                                 | 8.7                                                                                 | 4.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 48.2                                                                              | 47.8                                                                              | 47.9                                                                              | 91.4                                                                              | 20.6                                                                              | 20.5                                                                              | 27.9                                                                               | 0.0                                                                                 | 34.6                                                                                | 31.4                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | D                                                                                 | D                                                                                 | D                                                                                 | F                                                                                 | C                                                                                 | C                                                                                 | C                                                                                  |                                                                                     | C                                                                                   | C                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1790                                                                              |                                                                                   |                                                                                   | 1099                                                                              |                                                                                   |                                                                                    | 473                                                                                 |                                                                                     |                                                                                     | 165                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 47.9                                                                              |                                                                                   |                                                                                   | 26.2                                                                              |                                                                                   |                                                                                    | 33.0                                                                                |                                                                                     |                                                                                     | 31.4                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 9.0                                                                               | 48.3                                                                              |                                                                                   | 30.3                                                                              | 11.5                                                                              | 45.8                                                                              |                                                                                    | 30.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 7.0                                                                               |                                                                                   | 4.6                                                                               | 4.0                                                                               | * 7                                                                               |                                                                                    | * 4.6                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 5.0                                                                               | 41.3                                                                              |                                                                                   | 28.1                                                                              | 12.0                                                                              | * 35                                                                              |                                                                                    | * 29                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 6.3                                                                               | 41.7                                                                              |                                                                                   | 24.2                                                                              | 7.9                                                                               | 21.1                                                                              |                                                                                    | 20.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.0                                                                               |                                                                                   | 1.5                                                                               | 0.1                                                                               | 11.9                                                                              |                                                                                    | 2.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 38.4                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 4: West Bernardo Dr & Rancho Bernardo Rd

3/7/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |  |  |  |                                                                                     |
| Traffic Volume (veh/h)       | 167                                                                               | 1689                                                                              | 52                                                                                | 176                                                                               | 927                                                                               | 477                                                                               | 143                                                                                | 322                                                                                 | 629                                                                                 | 327                                                                                 | 66                                                                                  | 68                                                                                  |
| Future Volume (veh/h)        | 167                                                                               | 1689                                                                              | 52                                                                                | 176                                                                               | 927                                                                               | 477                                                                               | 143                                                                                | 322                                                                                 | 629                                                                                 | 327                                                                                 | 66                                                                                  | 68                                                                                  |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                               | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 170                                                                               | 1723                                                                              | 53                                                                                | 180                                                                               | 946                                                                               | 487                                                                               | 146                                                                                | 329                                                                                 | 642                                                                                 | 334                                                                                 | 67                                                                                  | 69                                                                                  |
| Adj No. of Lanes             | 2                                                                                 | 3                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 | 1                                                                                 | 2                                                                                  | 2                                                                                   | 1                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                               | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 226                                                                               | 1643                                                                              | 51                                                                                | 396                                                                               | 1367                                                                              | 610                                                                               | 214                                                                                | 921                                                                                 | 593                                                                                 | 414                                                                                 | 563                                                                                 | 504                                                                                 |
| Arrive On Green              | 0.07                                                                              | 0.32                                                                              | 0.32                                                                              | 0.12                                                                              | 0.39                                                                              | 0.39                                                                              | 0.06                                                                               | 0.26                                                                                | 0.26                                                                                | 0.12                                                                                | 0.32                                                                                | 0.32                                                                                |
| Sat Flow, veh/h              | 3442                                                                              | 5069                                                                              | 156                                                                               | 3442                                                                              | 3539                                                                              | 1580                                                                              | 3442                                                                               | 3539                                                                                | 1578                                                                                | 3442                                                                                | 1770                                                                                | 1583                                                                                |
| Grp Volume(v), veh/h         | 170                                                                               | 1152                                                                              | 624                                                                               | 180                                                                               | 946                                                                               | 487                                                                               | 146                                                                                | 329                                                                                 | 642                                                                                 | 334                                                                                 | 67                                                                                  | 69                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1695                                                                              | 1835                                                                              | 1721                                                                              | 1770                                                                              | 1580                                                                              | 1721                                                                               | 1770                                                                                | 1578                                                                                | 1721                                                                                | 1770                                                                                | 1583                                                                                |
| Q Serve(g_s), s              | 5.8                                                                               | 38.5                                                                              | 38.5                                                                              | 5.8                                                                               | 26.6                                                                              | 32.5                                                                              | 4.9                                                                                | 9.0                                                                                 | 24.2                                                                                | 11.2                                                                                | 3.2                                                                                 | 3.7                                                                                 |
| Cycle Q Clear(g_c), s        | 5.8                                                                               | 38.5                                                                              | 38.5                                                                              | 5.8                                                                               | 26.6                                                                              | 32.5                                                                              | 4.9                                                                                | 9.0                                                                                 | 24.2                                                                                | 11.2                                                                                | 3.2                                                                                 | 3.7                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.08                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 226                                                                               | 1099                                                                              | 595                                                                               | 396                                                                               | 1367                                                                              | 610                                                                               | 214                                                                                | 921                                                                                 | 593                                                                                 | 414                                                                                 | 563                                                                                 | 504                                                                                 |
| V/C Ratio(X)                 | 0.75                                                                              | 1.05                                                                              | 1.05                                                                              | 0.45                                                                              | 0.69                                                                              | 0.80                                                                              | 0.68                                                                               | 0.36                                                                                | 1.08                                                                                | 0.81                                                                                | 0.12                                                                                | 0.14                                                                                |
| Avail Cap(c_a), veh/h        | 267                                                                               | 1099                                                                              | 595                                                                               | 498                                                                               | 1391                                                                              | 621                                                                               | 988                                                                                | 1165                                                                                | 702                                                                                 | 872                                                                                 | 563                                                                                 | 504                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 54.5                                                                              | 40.2                                                                              | 40.2                                                                              | 49.1                                                                              | 30.6                                                                              | 32.4                                                                              | 54.5                                                                               | 35.8                                                                                | 21.1                                                                                | 50.9                                                                                | 28.7                                                                                | 28.9                                                                                |
| Incr Delay (d2), s/veh       | 9.6                                                                               | 40.8                                                                              | 50.5                                                                              | 0.8                                                                               | 1.5                                                                               | 7.2                                                                               | 3.8                                                                                | 0.2                                                                                 | 58.9                                                                                | 3.8                                                                                 | 0.1                                                                                 | 0.1                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 3.0                                                                               | 24.1                                                                              | 27.7                                                                              | 2.8                                                                               | 13.3                                                                              | 15.4                                                                              | 2.5                                                                                | 4.4                                                                                 | 24.0                                                                                | 5.6                                                                                 | 1.6                                                                                 | 1.6                                                                                 |
| LnGrp Delay(d),s/veh         | 64.1                                                                              | 81.0                                                                              | 90.7                                                                              | 49.9                                                                              | 32.0                                                                              | 39.5                                                                              | 58.3                                                                               | 36.1                                                                                | 79.9                                                                                | 54.7                                                                                | 28.8                                                                                | 29.0                                                                                |
| LnGrp LOS                    | E                                                                                 | F                                                                                 | F                                                                                 | D                                                                                 | C                                                                                 | D                                                                                 | E                                                                                  | D                                                                                   | F                                                                                   | D                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 1946                                                                              |                                                                                   |                                                                                   | 1613                                                                              |                                                                                   |                                                                                    | 1117                                                                                |                                                                                     |                                                                                     | 470                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 82.6                                                                              |                                                                                   |                                                                                   | 36.3                                                                              |                                                                                   |                                                                                    | 64.2                                                                                |                                                                                     |                                                                                     | 47.2                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | E                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 19.4                                                                              | 44.4                                                                              | 11.8                                                                              | 43.2                                                                              | 12.2                                                                              | 51.6                                                                              | 18.7                                                                               | 36.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.7                                                                               | * 5.9                                                                             | 4.4                                                                               | 5.4                                                                               | 4.4                                                                               | 5.7                                                                               | 4.4                                                                                | 5.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 17.2                                                                              | * 39                                                                              | 34.1                                                                              | 35.1                                                                              | 9.2                                                                               | 46.7                                                                              | 30.1                                                                               | 39.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 7.8                                                                               | 40.5                                                                              | 6.9                                                                               | 5.7                                                                               | 7.8                                                                               | 34.5                                                                              | 13.2                                                                               | 26.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 5.9                                                                               | 0.0                                                                               | 0.5                                                                               | 6.3                                                                               | 0.1                                                                               | 7.1                                                                               | 1.1                                                                                | 4.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 60.9                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 5: I-15 SB Ramps & Rancho Bernardo Rd

3/7/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |                                                                                   |  |  |                                                                                    |                                                                                     |                                                                                     |  |                                                                                     |  |
| Traffic Volume (veh/h)       | 0                                                                                 | 1677                                                                              | 966                                                                               | 0                                                                                 | 1112                                                                              | 559                                                                               | 0                                                                                  | 0                                                                                   | 0                                                                                   | 409                                                                                 | 0                                                                                   | 430                                                                                 |
| Future Volume (veh/h)        | 0                                                                                 | 1677                                                                              | 966                                                                               | 0                                                                                 | 1112                                                                              | 559                                                                               | 0                                                                                  | 0                                                                                   | 0                                                                                   | 409                                                                                 | 0                                                                                   | 430                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                |                                                                                    |                                                                                     |                                                                                     | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 0                                                                                 | 1863                                                                              | 1863                                                                              | 0                                                                                 | 1863                                                                              | 1863                                                                              |                                                                                    |                                                                                     |                                                                                     | 1863                                                                                | 0                                                                                   | 1863                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 2224                                                                              | 688                                                                               | 0                                                                                 | 1158                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 426                                                                                 | 0                                                                                   | 448                                                                                 |
| Adj No. of Lanes             | 0                                                                                 | 3                                                                                 | 1                                                                                 | 0                                                                                 | 3                                                                                 | 1                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 2                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.96                                                                              | 0.96                                                                              | 0.92                                                                              | 0.96                                                                              | 0.96                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.96                                                                                | 0.92                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %         | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 0                                                                                 | 4045                                                                              | 1146                                                                              | 0                                                                                 | 4045                                                                              | 1146                                                                              |                                                                                    |                                                                                     |                                                                                     | 643                                                                                 | 0                                                                                   | 521                                                                                 |
| Arrive On Green              | 0.00                                                                              | 0.72                                                                              | 0.72                                                                              | 0.00                                                                              | 1.00                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.19                                                                                | 0.00                                                                                | 0.19                                                                                |
| Sat Flow, veh/h              | 0                                                                                 | 5588                                                                              | 1583                                                                              | 0                                                                                 | 5588                                                                              | 1583                                                                              |                                                                                    |                                                                                     |                                                                                     | 3442                                                                                | 0                                                                                   | 2787                                                                                |
| Grp Volume(v), veh/h         | 0                                                                                 | 2224                                                                              | 688                                                                               | 0                                                                                 | 1158                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 426                                                                                 | 0                                                                                   | 448                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1863                                                                              | 1583                                                                              | 0                                                                                 | 1863                                                                              | 1583                                                                              |                                                                                    |                                                                                     |                                                                                     | 1721                                                                                | 0                                                                                   | 1393                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 25.6                                                                              | 29.7                                                                              | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 16.1                                                                                | 0.0                                                                                 | 21.8                                                                                |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 25.6                                                                              | 29.7                                                                              | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 16.1                                                                                | 0.0                                                                                 | 21.8                                                                                |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 1.00                                                                              | 0.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 4045                                                                              | 1146                                                                              | 0                                                                                 | 4045                                                                              | 1146                                                                              |                                                                                    |                                                                                     |                                                                                     | 643                                                                                 | 0                                                                                   | 521                                                                                 |
| V/C Ratio(X)                 | 0.00                                                                              | 0.55                                                                              | 0.60                                                                              | 0.00                                                                              | 0.29                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.66                                                                                | 0.00                                                                                | 0.86                                                                                |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 4045                                                                              | 1146                                                                              | 0                                                                                 | 4045                                                                              | 1146                                                                              |                                                                                    |                                                                                     |                                                                                     | 784                                                                                 | 0                                                                                   | 635                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                              | 2.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.00                                                                              | 0.12                                                                              | 0.12                                                                              | 0.00                                                                              | 0.85                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 8.9                                                                               | 9.4                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 52.8                                                                                | 0.0                                                                                 | 55.1                                                                                |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.1                                                                               | 0.3                                                                               | 0.0                                                                               | 0.2                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 1.5                                                                                 | 0.0                                                                                 | 9.9                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 13.0                                                                              | 12.9                                                                              | 0.0                                                                               | 0.1                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 7.8                                                                                 | 0.0                                                                                 | 9.1                                                                                 |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 8.9                                                                               | 9.7                                                                               | 0.0                                                                               | 0.2                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 54.4                                                                                | 0.0                                                                                 | 65.0                                                                                |
| LnGrp LOS                    |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     | D                                                                                   |                                                                                     | E                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 2912                                                                              |                                                                                   |                                                                                   | 1158                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 874                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 9.1                                                                               |                                                                                   |                                                                                   | 0.2                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 59.8                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 107.7                                                                             |                                                                                   | 32.3                                                                              |                                                                                   | 107.7                                                                             |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 6.4                                                                               |                                                                                   | 6.1                                                                               |                                                                                   | 6.4                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 95.6                                                                              |                                                                                   | 31.9                                                                              |                                                                                   | 95.6                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 31.7                                                                              |                                                                                   | 23.8                                                                              |                                                                                   | 2.0                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 56.9                                                                              |                                                                                   | 2.4                                                                               |                                                                                   | 79.3                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 16.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 6: I-15 NB Ramps & Rancho Bernardo Rd

3/7/2016

|                              |  |  |  |  |  |   |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                                | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |                                                                                   |  |  |  |                                                                                     |  |                                                                                     |                                                                                     |                                                                                     |
| Traffic Volume (veh/h)       | 0                                                                                 | 922                                                                               | 1164                                                                              | 0                                                                                 | 994                                                                               | 487                                                                                | 678                                                                                | 0                                                                                   | 432                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Future Volume (veh/h)        | 0                                                                                 | 922                                                                               | 1164                                                                              | 0                                                                                 | 994                                                                               | 487                                                                                | 678                                                                                | 0                                                                                   | 432                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                 | 3                                                                                  | 8                                                                                   | 18                                                                                  |                                                                                     |                                                                                     |                                                                                     |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                  | 0                                                                                   | 0                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                               | 1.00                                                                               |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Adj Sat Flow, veh/h/ln       | 0                                                                                 | 1863                                                                              | 1863                                                                              | 0                                                                                 | 1863                                                                              | 1863                                                                               | 1863                                                                               | 0                                                                                   | 1863                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Adj Flow Rate, veh/h         | 0                                                                                 | 981                                                                               | 0                                                                                 | 0                                                                                 | 1057                                                                              | 518                                                                                | 721                                                                                | 0                                                                                   | 460                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Adj No. of Lanes             | 0                                                                                 | 3                                                                                 | 1                                                                                 | 0                                                                                 | 3                                                                                 | 1                                                                                  | 2                                                                                  | 0                                                                                   | 2                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Peak Hour Factor             | 0.92                                                                              | 0.94                                                                              | 0.94                                                                              | 0.92                                                                              | 0.94                                                                              | 0.94                                                                               | 0.94                                                                               | 0.92                                                                                | 0.94                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Percent Heavy Veh, %         | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                  | 0                                                                                   | 2                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Cap, veh/h                   | 0                                                                                 | 3701                                                                              | 1049                                                                              | 0                                                                                 | 3368                                                                              | 1049                                                                               | 855                                                                                | 0                                                                                   | 692                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Arrive On Green              | 0.00                                                                              | 1.00                                                                              | 0.00                                                                              | 0.00                                                                              | 0.66                                                                              | 0.66                                                                               | 0.25                                                                               | 0.00                                                                                | 0.25                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Sat Flow, veh/h              | 0                                                                                 | 5588                                                                              | 1583                                                                              | 0                                                                                 | 5253                                                                              | 1583                                                                               | 3442                                                                               | 0                                                                                   | 2787                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Grp Volume(v), veh/h         | 0                                                                                 | 981                                                                               | 0                                                                                 | 0                                                                                 | 1057                                                                              | 518                                                                                | 721                                                                                | 0                                                                                   | 460                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1863                                                                              | 1583                                                                              | 0                                                                                 | 1695                                                                              | 1583                                                                               | 1721                                                                               | 0                                                                                   | 1393                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Q Serve(g_s), s              | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 12.4                                                                              | 23.0                                                                               | 27.9                                                                               | 0.0                                                                                 | 20.8                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 12.4                                                                              | 23.0                                                                               | 27.9                                                                               | 0.0                                                                                 | 20.8                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 1.00                                                                              | 0.00                                                                              |                                                                                   | 1.00                                                                               | 1.00                                                                               |                                                                                     | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 3701                                                                              | 1049                                                                              | 0                                                                                 | 3368                                                                              | 1049                                                                               | 855                                                                                | 0                                                                                   | 692                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| V/C Ratio(X)                 | 0.00                                                                              | 0.27                                                                              | 0.00                                                                              | 0.00                                                                              | 0.31                                                                              | 0.49                                                                               | 0.84                                                                               | 0.00                                                                                | 0.66                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 3701                                                                              | 1049                                                                              | 0                                                                                 | 3368                                                                              | 1049                                                                               | 1251                                                                               | 0                                                                                   | 1013                                                                                |                                                                                     |                                                                                     |                                                                                     |
| HCM Platoon Ratio            | 1.00                                                                              | 1.67                                                                              | 1.67                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Upstream Filter(I)           | 0.00                                                                              | 0.73                                                                              | 0.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 10.1                                                                              | 11.9                                                                               | 50.0                                                                               | 0.0                                                                                 | 47.4                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.1                                                                               | 0.0                                                                               | 0.0                                                                               | 0.2                                                                               | 1.7                                                                                | 3.6                                                                                | 0.0                                                                                 | 1.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 5.9                                                                               | 10.4                                                                               | 13.6                                                                               | 0.0                                                                                 | 8.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 0.1                                                                               | 0.0                                                                               | 0.0                                                                               | 10.3                                                                              | 13.5                                                                               | 53.6                                                                               | 0.0                                                                                 | 48.5                                                                                |                                                                                     |                                                                                     |                                                                                     |
| LnGrp LOS                    |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 | B                                                                                  | D                                                                                  |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 981                                                                               |                                                                                   |                                                                                   | 1575                                                                              |                                                                                    |                                                                                    | 1181                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 0.1                                                                               |                                                                                   |                                                                                   | 11.4                                                                              |                                                                                    |                                                                                    | 51.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                    |                                                                                    | D                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                  | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                  |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 99.1                                                                              |                                                                                   |                                                                                   |                                                                                   | 99.1                                                                               |                                                                                    | 40.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 6.4                                                                               |                                                                                   |                                                                                   |                                                                                   | 6.4                                                                                |                                                                                    | 6.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 76.6                                                                              |                                                                                   |                                                                                   |                                                                                   | 76.6                                                                               |                                                                                    | 50.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 2.0                                                                               |                                                                                   |                                                                                   |                                                                                   | 25.0                                                                               |                                                                                    | 29.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 33.1                                                                              |                                                                                   |                                                                                   |                                                                                   | 28.2                                                                               |                                                                                    | 4.9                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 21.1                                                                              |                                                                                   |                                                                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# HCM 2010 Signalized Intersection Summary

## 7: Bernardo Center Dr & Rancho Bernardo Rd

3/7/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|--|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |  |  |  |  |
| Lane Configurations          |  |  |  |  |  |                                                                                   |  |  |                                                                                     |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 258                                                                               | 689                                                                               | 307                                                                               | 123                                                                               | 637                                                                               | 145                                                                               | 433                                                                                | 465                                                                                 | 247                                                                                 | 173                                                                                 | 276                                                                                 | 101                                                                                 |  |  |  |  |
| Future Volume (veh/h)        | 258                                                                               | 689                                                                               | 307                                                                               | 123                                                                               | 637                                                                               | 145                                                                               | 433                                                                                | 465                                                                                 | 247                                                                                 | 173                                                                                 | 276                                                                                 | 101                                                                                 |  |  |  |  |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |  |  |  |  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |  |  |  |  |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.98                                                                                |  |  |  |  |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |  |  |  |  |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |  |  |  |  |
| Adj Flow Rate, veh/h         | 272                                                                               | 725                                                                               | 323                                                                               | 129                                                                               | 671                                                                               | 153                                                                               | 456                                                                                | 489                                                                                 | 260                                                                                 | 182                                                                                 | 291                                                                                 | 106                                                                                 |  |  |  |  |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 | 1                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                  | 2                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   | 1                                                                                   |  |  |  |  |
| Peak Hour Factor             | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                               | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |  |  |  |  |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |  |  |  |  |
| Cap, veh/h                   | 342                                                                               | 1316                                                                              | 552                                                                               | 194                                                                               | 894                                                                               | 204                                                                               | 532                                                                                | 664                                                                                 | 351                                                                                 | 256                                                                                 | 767                                                                                 | 488                                                                                 |  |  |  |  |
| Arrive On Green              | 0.10                                                                              | 0.35                                                                              | 0.35                                                                              | 0.06                                                                              | 0.31                                                                              | 0.31                                                                              | 0.15                                                                               | 0.30                                                                                | 0.30                                                                                | 0.07                                                                                | 0.22                                                                                | 0.22                                                                                |  |  |  |  |
| Sat Flow, veh/h              | 3548                                                                              | 3725                                                                              | 1563                                                                              | 3442                                                                              | 2856                                                                              | 651                                                                               | 3442                                                                               | 2236                                                                                | 1183                                                                                | 3442                                                                                | 3539                                                                                | 1549                                                                                |  |  |  |  |
| Grp Volume(v), veh/h         | 272                                                                               | 725                                                                               | 323                                                                               | 129                                                                               | 415                                                                               | 409                                                                               | 456                                                                                | 386                                                                                 | 363                                                                                 | 182                                                                                 | 291                                                                                 | 106                                                                                 |  |  |  |  |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1863                                                                              | 1563                                                                              | 1721                                                                              | 1770                                                                              | 1738                                                                              | 1721                                                                               | 1770                                                                                | 1650                                                                                | 1721                                                                                | 1770                                                                                | 1549                                                                                |  |  |  |  |
| Q Serve(g_s), s              | 7.2                                                                               | 14.9                                                                              | 16.1                                                                              | 3.5                                                                               | 20.1                                                                              | 20.1                                                                              | 12.3                                                                               | 18.7                                                                                | 18.9                                                                                | 4.9                                                                                 | 6.7                                                                                 | 4.8                                                                                 |  |  |  |  |
| Cycle Q Clear(g_c), s        | 7.2                                                                               | 14.9                                                                              | 16.1                                                                              | 3.5                                                                               | 20.1                                                                              | 20.1                                                                              | 12.3                                                                               | 18.7                                                                                | 18.9                                                                                | 4.9                                                                                 | 6.7                                                                                 | 4.8                                                                                 |  |  |  |  |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.37                                                                              | 1.00                                                                               |                                                                                     | 0.72                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |  |  |  |  |
| Lane Grp Cap(c), veh/h       | 342                                                                               | 1316                                                                              | 552                                                                               | 194                                                                               | 554                                                                               | 544                                                                               | 532                                                                                | 525                                                                                 | 490                                                                                 | 256                                                                                 | 767                                                                                 | 488                                                                                 |  |  |  |  |
| V/C Ratio(X)                 | 0.79                                                                              | 0.55                                                                              | 0.58                                                                              | 0.67                                                                              | 0.75                                                                              | 0.75                                                                              | 0.86                                                                               | 0.74                                                                                | 0.74                                                                                | 0.71                                                                                | 0.38                                                                                | 0.22                                                                                |  |  |  |  |
| Avail Cap(c_a), veh/h        | 361                                                                               | 1391                                                                              | 584                                                                               | 249                                                                               | 626                                                                               | 614                                                                               | 599                                                                                | 850                                                                                 | 793                                                                                 | 412                                                                                 | 1485                                                                                | 803                                                                                 |  |  |  |  |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |  |  |  |  |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |  |  |  |  |
| Uniform Delay (d), s/veh     | 42.1                                                                              | 24.7                                                                              | 25.1                                                                              | 44.1                                                                              | 29.4                                                                              | 29.4                                                                              | 39.3                                                                               | 30.2                                                                                | 30.2                                                                                | 43.1                                                                                | 31.9                                                                                | 24.1                                                                                |  |  |  |  |
| Incr Delay (d2), s/veh       | 11.1                                                                              | 0.4                                                                               | 1.4                                                                               | 4.4                                                                               | 4.4                                                                               | 4.6                                                                               | 10.9                                                                               | 2.0                                                                                 | 2.2                                                                                 | 3.7                                                                                 | 0.3                                                                                 | 0.2                                                                                 |  |  |  |  |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |  |  |  |  |
| %ile BackOfQ(50%),veh/ln     | 4.0                                                                               | 7.7                                                                               | 7.1                                                                               | 1.8                                                                               | 10.5                                                                              | 10.3                                                                              | 6.6                                                                                | 9.4                                                                                 | 8.9                                                                                 | 2.5                                                                                 | 3.3                                                                                 | 2.1                                                                                 |  |  |  |  |
| LnGrp Delay(d),s/veh         | 53.3                                                                              | 25.2                                                                              | 26.5                                                                              | 48.5                                                                              | 33.8                                                                              | 34.0                                                                              | 50.1                                                                               | 32.2                                                                                | 32.4                                                                                | 46.8                                                                                | 32.2                                                                                | 24.4                                                                                |  |  |  |  |
| LnGrp LOS                    | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                  | C                                                                                   | C                                                                                   | D                                                                                   | C                                                                                   | C                                                                                   |  |  |  |  |
| Approach Vol, veh/h          | 1320                                                                              |                                                                                   |                                                                                   |                                                                                   | 953                                                                               |                                                                                   |                                                                                    |                                                                                     | 1205                                                                                |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Approach Delay, s/veh        | 31.3                                                                              |                                                                                   |                                                                                   |                                                                                   | 35.9                                                                              |                                                                                   |                                                                                    |                                                                                     | 39.1                                                                                |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Phs Duration (G+Y+Rc), s     | 9.8                                                                               | 39.9                                                                              | 19.1                                                                              | 26.5                                                                              | 13.6                                                                              | 36.0                                                                              | 11.5                                                                               | 34.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Change Period (Y+Rc), s      | 4.4                                                                               | 6.2                                                                               | 4.4                                                                               | 5.9                                                                               | 4.4                                                                               | * 6.2                                                                             | 4.4                                                                                | * 5.9                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Max Green Setting (Gmax), s  | 6.9                                                                               | 35.6                                                                              | 16.6                                                                              | 40.0                                                                              | 9.7                                                                               | * 34                                                                              | 11.4                                                                               | * 46                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Max Q Clear Time (g_c+I1), s | 5.5                                                                               | 18.1                                                                              | 14.3                                                                              | 8.7                                                                               | 9.2                                                                               | 22.1                                                                              | 6.9                                                                                | 20.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Green Ext Time (p_c), s      | 0.0                                                                               | 10.3                                                                              | 0.4                                                                               | 7.8                                                                               | 0.1                                                                               | 7.7                                                                               | 0.2                                                                                | 7.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| HCM 2010 Ctrl Delay          | 35.2                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| HCM 2010 LOS                 | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |

# HCM 2010 Signalized Intersection Summary

## 8: West Bernardo Dr & Duenda Rd

3/7/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |                                                                                     |  |  |  |
| Traffic Volume (veh/h)       | 21                                                                                | 131                                                                               | 133                                                                               | 73                                                                                | 70                                                                                | 63                                                                                | 71                                                                                 | 147                                                                                 | 90                                                                                  | 106                                                                                 | 202                                                                                 | 12                                                                                  |
| Future Volume (veh/h)        | 21                                                                                | 131                                                                               | 133                                                                               | 73                                                                                | 70                                                                                | 63                                                                                | 71                                                                                 | 147                                                                                 | 90                                                                                  | 106                                                                                 | 202                                                                                 | 12                                                                                  |
| Number                       | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                  | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.98                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.98                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 24                                                                                | 147                                                                               | 149                                                                               | 82                                                                                | 79                                                                                | 71                                                                                | 80                                                                                 | 165                                                                                 | 101                                                                                 | 119                                                                                 | 227                                                                                 | 13                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                  | 2                                                                                   | 0                                                                                   | 1                                                                                   | 2                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                               | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                | 0.89                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 419                                                                               | 199                                                                               | 201                                                                               | 169                                                                               | 177                                                                               | 150                                                                               | 102                                                                                | 349                                                                                 | 203                                                                                 | 155                                                                                 | 653                                                                                 | 37                                                                                  |
| Arrive On Green              | 0.24                                                                              | 0.24                                                                              | 0.24                                                                              | 0.10                                                                              | 0.10                                                                              | 0.10                                                                              | 0.06                                                                               | 0.16                                                                                | 0.16                                                                                | 0.09                                                                                | 0.19                                                                                | 0.19                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 842                                                                               | 853                                                                               | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                               | 2158                                                                                | 1253                                                                                | 1774                                                                                | 3400                                                                                | 193                                                                                 |
| Grp Volume(v), veh/h         | 24                                                                                | 0                                                                                 | 296                                                                               | 82                                                                                | 79                                                                                | 71                                                                                | 80                                                                                 | 134                                                                                 | 132                                                                                 | 119                                                                                 | 117                                                                                 | 123                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 0                                                                                 | 1695                                                                              | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                               | 1770                                                                                | 1642                                                                                | 1774                                                                                | 1770                                                                                | 1823                                                                                |
| Q Serve(g_s), s              | 0.5                                                                               | 0.0                                                                               | 7.7                                                                               | 2.1                                                                               | 1.9                                                                               | 2.0                                                                               | 2.1                                                                                | 3.3                                                                                 | 3.5                                                                                 | 3.1                                                                                 | 2.7                                                                                 | 2.8                                                                                 |
| Cycle Q Clear(g_c), s        | 0.5                                                                               | 0.0                                                                               | 7.7                                                                               | 2.1                                                                               | 1.9                                                                               | 2.0                                                                               | 2.1                                                                                | 3.3                                                                                 | 3.5                                                                                 | 3.1                                                                                 | 2.7                                                                                 | 2.8                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.50                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.76                                                                                | 1.00                                                                                |                                                                                     | 0.11                                                                                |
| Lane Grp Cap(c), veh/h       | 419                                                                               | 0                                                                                 | 400                                                                               | 169                                                                               | 177                                                                               | 150                                                                               | 102                                                                                | 286                                                                                 | 266                                                                                 | 155                                                                                 | 340                                                                                 | 350                                                                                 |
| V/C Ratio(X)                 | 0.06                                                                              | 0.00                                                                              | 0.74                                                                              | 0.49                                                                              | 0.45                                                                              | 0.47                                                                              | 0.79                                                                               | 0.47                                                                                | 0.50                                                                                | 0.77                                                                                | 0.35                                                                                | 0.35                                                                                |
| Avail Cap(c_a), veh/h        | 856                                                                               | 0                                                                                 | 818                                                                               | 670                                                                               | 704                                                                               | 598                                                                               | 335                                                                                | 668                                                                                 | 620                                                                                 | 410                                                                                 | 743                                                                                 | 765                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 14.1                                                                              | 0.0                                                                               | 16.8                                                                              | 20.5                                                                              | 20.4                                                                              | 20.4                                                                              | 22.2                                                                               | 18.1                                                                                | 18.2                                                                                | 21.3                                                                                | 16.7                                                                                | 16.7                                                                                |
| Incr Delay (d2), s/veh       | 0.1                                                                               | 0.0                                                                               | 2.7                                                                               | 2.2                                                                               | 1.8                                                                               | 2.3                                                                               | 12.5                                                                               | 1.2                                                                                 | 1.4                                                                                 | 7.7                                                                                 | 0.6                                                                                 | 0.6                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.2                                                                               | 0.0                                                                               | 3.9                                                                               | 1.1                                                                               | 1.1                                                                               | 1.0                                                                               | 1.4                                                                                | 1.7                                                                                 | 1.7                                                                                 | 1.9                                                                                 | 1.4                                                                                 | 1.5                                                                                 |
| LnGrp Delay(d),s/veh         | 14.2                                                                              | 0.0                                                                               | 19.5                                                                              | 22.6                                                                              | 22.1                                                                              | 22.7                                                                              | 34.7                                                                               | 19.3                                                                                | 19.6                                                                                | 29.0                                                                                | 17.3                                                                                | 17.3                                                                                |
| LnGrp LOS                    | B                                                                                 |                                                                                   | B                                                                                 | C                                                                                 | C                                                                                 | C                                                                                 | C                                                                                  | B                                                                                   | B                                                                                   | C                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 320                                                                               |                                                                                   |                                                                                   | 232                                                                               |                                                                                   |                                                                                    | 346                                                                                 |                                                                                     |                                                                                     | 359                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 19.1                                                                              |                                                                                   |                                                                                   | 22.5                                                                              |                                                                                   |                                                                                    | 23.0                                                                                |                                                                                     |                                                                                     | 21.2                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 9.2                                                                               | 12.7                                                                              |                                                                                   | 16.2                                                                              | 7.7                                                                               | 14.1                                                                              |                                                                                    | 9.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |                                                                                    | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 11.0                                                                              | 18.0                                                                              |                                                                                   | 23.0                                                                              | 9.0                                                                               | 20.0                                                                              |                                                                                    | 18.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 5.1                                                                               | 5.5                                                                               |                                                                                   | 9.7                                                                               | 4.1                                                                               | 4.8                                                                               |                                                                                    | 4.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 2.2                                                                               |                                                                                   | 1.6                                                                               | 0.1                                                                               | 2.4                                                                               |                                                                                    | 0.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 21.4                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 9: West Bernardo Dr & Via Del Campo

3/7/2016

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|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|---|
| Movement                     | EBL                                                                               | EBT                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                               |   |   |
| Lane Configurations          |  |  |  |                                                                                   |  |  |   |   |
| Traffic Volume (veh/h)       | 40                                                                                | 402                                                                               | 438                                                                               | 38                                                                                | 148                                                                               | 380                                                                               |   |   |
| Future Volume (veh/h)        | 40                                                                                | 402                                                                               | 438                                                                               | 38                                                                                | 148                                                                               | 380                                                                               |   |   |
| Number                       | 5                                                                                 | 2                                                                                 | 6                                                                                 | 16                                                                                | 7                                                                                 | 14                                                                                |   |   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |   |   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              |   |   |
| Adj Flow Rate, veh/h         | 47                                                                                | 467                                                                               | 509                                                                               | 44                                                                                | 172                                                                               | 442                                                                               |   |   |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 |   |   |
| Peak Hour Factor             | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              | 0.86                                                                              |   |   |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |   |
| Cap, veh/h                   | 60                                                                                | 2001                                                                              | 1577                                                                              | 136                                                                               | 551                                                                               | 492                                                                               |   |   |
| Arrive On Green              | 0.03                                                                              | 0.57                                                                              | 0.48                                                                              | 0.48                                                                              | 0.31                                                                              | 0.31                                                                              |   |   |
| Sat Flow, veh/h              | 1774                                                                              | 3632                                                                              | 3391                                                                              | 284                                                                               | 1774                                                                              | 1583                                                                              |   |   |
| Grp Volume(v), veh/h         | 47                                                                                | 467                                                                               | 272                                                                               | 281                                                                               | 172                                                                               | 442                                                                               |   |   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1770                                                                              | 1813                                                                              | 1774                                                                              | 1583                                                                              |   |   |
| Q Serve(g_s), s              | 2.2                                                                               | 5.4                                                                               | 7.8                                                                               | 7.9                                                                               | 6.1                                                                               | 22.0                                                                              |   |   |
| Cycle Q Clear(g_c), s        | 2.2                                                                               | 5.4                                                                               | 7.8                                                                               | 7.9                                                                               | 6.1                                                                               | 22.0                                                                              |   |   |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   | 0.16                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Lane Grp Cap(c), veh/h       | 60                                                                                | 2001                                                                              | 846                                                                               | 867                                                                               | 551                                                                               | 492                                                                               |   |   |
| V/C Ratio(X)                 | 0.79                                                                              | 0.23                                                                              | 0.32                                                                              | 0.32                                                                              | 0.31                                                                              | 0.90                                                                              |   |   |
| Avail Cap(c_a), veh/h        | 272                                                                               | 2001                                                                              | 846                                                                               | 867                                                                               | 718                                                                               | 641                                                                               |   |   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Uniform Delay (d), s/veh     | 39.4                                                                              | 8.9                                                                               | 13.2                                                                              | 13.2                                                                              | 21.6                                                                              | 27.1                                                                              |   |   |
| Incr Delay (d2), s/veh       | 20.0                                                                              | 0.3                                                                               | 1.0                                                                               | 1.0                                                                               | 0.3                                                                               | 13.0                                                                              |   |   |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |   |
| %ile BackOfQ(50%),veh/ln     | 1.4                                                                               | 2.7                                                                               | 4.0                                                                               | 4.1                                                                               | 3.0                                                                               | 18.8                                                                              |   |   |
| LnGrp Delay(d),s/veh         | 59.5                                                                              | 9.2                                                                               | 14.2                                                                              | 14.2                                                                              | 22.0                                                                              | 40.1                                                                              |   |   |
| LnGrp LOS                    | E                                                                                 | A                                                                                 | B                                                                                 | B                                                                                 | C                                                                                 | D                                                                                 |   |   |
| Approach Vol, veh/h          |                                                                                   | 514                                                                               | 553                                                                               |                                                                                   | 614                                                                               |                                                                                   |   |   |
| Approach Delay, s/veh        |                                                                                   | 13.8                                                                              | 14.2                                                                              |                                                                                   | 35.0                                                                              |                                                                                   |   |   |
| Approach LOS                 |                                                                                   | B                                                                                 | B                                                                                 |                                                                                   | D                                                                                 |                                                                                   |   |   |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8 |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |   |   |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 52.0                                                                              |                                                                                   | 30.2                                                                              | 7.2                                                                               | 44.8                                                                              |   |   |
| Change Period (Y+Rc), s      |                                                                                   | 5.5                                                                               |                                                                                   | * 4.7                                                                             | 4.4                                                                               | 5.5                                                                               |   |   |
| Max Green Setting (Gmax), s  |                                                                                   | 46.5                                                                              |                                                                                   | * 33                                                                              | 12.6                                                                              | 29.5                                                                              |   |   |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 7.4                                                                               |                                                                                   | 24.0                                                                              | 4.2                                                                               | 9.9                                                                               |   |   |
| Green Ext Time (p_c), s      |                                                                                   | 7.2                                                                               |                                                                                   | 1.6                                                                               | 0.0                                                                               | 6.0                                                                               |   |   |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 21.7                                                                              |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |   |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |

# HCM 2010 Signalized Intersection Summary

## 10: Bernardo Center Dr & West Bernardo Dr

3/7/2016

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|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|
| Movement                     | EBL                                                                               | EBT                                                                               | WBU                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                                 |      |
| Lane Configurations          |  |  |  |  |  |  |  |      |
| Traffic Volume (veh/h)       | 417                                                                               | 385                                                                               | 0                                                                                 | 369                                                                               | 356                                                                               | 352                                                                               | 492                                                                                 |      |
| Future Volume (veh/h)        | 417                                                                               | 385                                                                               | 0                                                                                 | 369                                                                               | 356                                                                               | 352                                                                               | 492                                                                                 |      |
| Number                       | 1                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 12                                                                                | 3                                                                                 | 18                                                                                  |      |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   |      |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              |                                                                                   | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                                |      |
| Adj Flow Rate, veh/h         | 444                                                                               | 410                                                                               |                                                                                   | 393                                                                               | 379                                                                               | 374                                                                               | 523                                                                                 |      |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 |                                                                                   | 1                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                   |      |
| Peak Hour Factor             | 0.94                                                                              | 0.94                                                                              |                                                                                   | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                                |      |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   |      |
| Cap, veh/h                   | 584                                                                               | 1919                                                                              |                                                                                   | 580                                                                               | 1760                                                                              | 569                                                                               | 776                                                                                 |      |
| Arrive On Green              | 0.17                                                                              | 0.54                                                                              |                                                                                   | 0.31                                                                              | 0.31                                                                              | 0.32                                                                              | 0.32                                                                                |      |
| Sat Flow, veh/h              | 3442                                                                              | 3632                                                                              |                                                                                   | 1863                                                                              | 2782                                                                              | 1774                                                                              | 1583                                                                                |      |
| Grp Volume(v), veh/h         | 444                                                                               | 410                                                                               |                                                                                   | 393                                                                               | 379                                                                               | 374                                                                               | 523                                                                                 |      |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1770                                                                              |                                                                                   | 1863                                                                              | 1391                                                                              | 1774                                                                              | 1583                                                                                |      |
| Q Serve(g_s), s              | 8.9                                                                               | 4.3                                                                               |                                                                                   | 13.3                                                                              | 4.2                                                                               | 13.1                                                                              | 18.1                                                                                |      |
| Cycle Q Clear(g_c), s        | 8.9                                                                               | 4.3                                                                               |                                                                                   | 13.3                                                                              | 4.2                                                                               | 13.1                                                                              | 18.1                                                                                |      |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Lane Grp Cap(c), veh/h       | 584                                                                               | 1919                                                                              |                                                                                   | 580                                                                               | 1760                                                                              | 569                                                                               | 776                                                                                 |      |
| V/C Ratio(X)                 | 0.76                                                                              | 0.21                                                                              |                                                                                   | 0.68                                                                              | 0.22                                                                              | 0.66                                                                              | 0.67                                                                                |      |
| Avail Cap(c_a), veh/h        | 1222                                                                              | 3175                                                                              |                                                                                   | 1098                                                                              | 2533                                                                              | 925                                                                               | 1094                                                                                |      |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Uniform Delay (d), s/veh     | 28.5                                                                              | 8.5                                                                               |                                                                                   | 21.7                                                                              | 5.7                                                                               | 21.1                                                                              | 14.0                                                                                |      |
| Incr Delay (d2), s/veh       | 2.1                                                                               | 0.1                                                                               |                                                                                   | 1.4                                                                               | 0.1                                                                               | 1.3                                                                               | 1.0                                                                                 |      |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 |      |
| %ile BackOfQ(50%),veh/ln     | 4.4                                                                               | 2.1                                                                               |                                                                                   | 7.0                                                                               | 1.6                                                                               | 6.5                                                                               | 8.0                                                                                 |      |
| LnGrp Delay(d),s/veh         | 30.6                                                                              | 8.6                                                                               |                                                                                   | 23.1                                                                              | 5.7                                                                               | 22.4                                                                              | 15.0                                                                                |      |
| LnGrp LOS                    | C                                                                                 | A                                                                                 |                                                                                   | C                                                                                 | A                                                                                 | C                                                                                 | B                                                                                   |      |
| Approach Vol, veh/h          |                                                                                   | 854                                                                               |                                                                                   | 772                                                                               |                                                                                   | 897                                                                               |                                                                                     |      |
| Approach Delay, s/veh        |                                                                                   | 20.0                                                                              |                                                                                   | 14.5                                                                              |                                                                                   | 18.1                                                                              |                                                                                     |      |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   | B                                                                                 |                                                                                   | B                                                                                 |                                                                                     |      |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8    |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                     | 8    |
| Phs Duration (G+Y+Rc), s     | 16.6                                                                              | 28.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 44.6                                                                              |                                                                                     | 27.5 |
| Change Period (Y+Rc), s      | 4.4                                                                               | 5.5                                                                               |                                                                                   |                                                                                   |                                                                                   | * 5.5                                                                             |                                                                                     | 4.4  |
| Max Green Setting (Gmax), s  | 25.6                                                                              | 42.5                                                                              |                                                                                   |                                                                                   |                                                                                   | * 65                                                                              |                                                                                     | 37.6 |
| Max Q Clear Time (g_c+I1), s | 10.9                                                                              | 15.3                                                                              |                                                                                   |                                                                                   |                                                                                   | 6.3                                                                               |                                                                                     | 20.1 |
| Green Ext Time (p_c), s      | 1.4                                                                               | 7.1                                                                               |                                                                                   |                                                                                   |                                                                                   | 7.8                                                                               |                                                                                     | 3.0  |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 17.7                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |

# HCM 2010 Signalized Intersection Summary

## 1: Camino San Bernardo & Rancho Bernardo Rd

3/17/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 30                                                                                | 1039                                                                              | 190                                                                               | 483                                                                               | 786                                                                               | 80                                                                                | 40                                                                                 | 10                                                                                  | 212                                                                                 | 20                                                                                  | 10                                                                                  | 10                                                                                  |
| Future Volume (veh/h)        | 30                                                                                | 1039                                                                              | 190                                                                               | 483                                                                               | 786                                                                               | 80                                                                                | 40                                                                                 | 10                                                                                  | 212                                                                                 | 20                                                                                  | 10                                                                                  | 10                                                                                  |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.98                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.98                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 33                                                                                | 1129                                                                              | 207                                                                               | 525                                                                               | 854                                                                               | 87                                                                                | 43                                                                                 | 11                                                                                  | 230                                                                                 | 22                                                                                  | 11                                                                                  | 11                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                  | 2                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 57                                                                                | 1322                                                                              | 241                                                                               | 619                                                                               | 1917                                                                              | 195                                                                               | 298                                                                                | 334                                                                                 | 294                                                                                 | 98                                                                                  | 49                                                                                  | 27                                                                                  |
| Arrive On Green              | 0.03                                                                              | 0.44                                                                              | 0.44                                                                              | 0.18                                                                              | 0.59                                                                              | 0.59                                                                              | 0.19                                                                               | 0.19                                                                                | 0.19                                                                                | 0.19                                                                                | 0.19                                                                                | 0.19                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 2982                                                                              | 544                                                                               | 3442                                                                              | 3244                                                                              | 330                                                                               | 1384                                                                               | 1770                                                                                | 1558                                                                                | 175                                                                                 | 258                                                                                 | 144                                                                                 |
| Grp Volume(v), veh/h         | 33                                                                                | 668                                                                               | 668                                                                               | 525                                                                               | 466                                                                               | 475                                                                               | 43                                                                                 | 11                                                                                  | 230                                                                                 | 44                                                                                  | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1756                                                                              | 1721                                                                              | 1770                                                                              | 1804                                                                              | 1384                                                                               | 1770                                                                                | 1558                                                                                | 577                                                                                 | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 1.5                                                                               | 27.8                                                                              | 28.2                                                                              | 12.2                                                                              | 12.1                                                                              | 12.1                                                                              | 0.0                                                                                | 0.4                                                                                 | 11.6                                                                                | 0.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 1.5                                                                               | 27.8                                                                              | 28.2                                                                              | 12.2                                                                              | 12.1                                                                              | 12.1                                                                              | 2.9                                                                                | 0.4                                                                                 | 11.6                                                                                | 11.9                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.31                                                                              | 1.00                                                                              |                                                                                   | 0.18                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 0.50                                                                                |                                                                                     | 0.25                                                                                |
| Lane Grp Cap(c), veh/h       | 57                                                                                | 785                                                                               | 779                                                                               | 619                                                                               | 1046                                                                              | 1067                                                                              | 298                                                                                | 334                                                                                 | 294                                                                                 | 174                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.58                                                                              | 0.85                                                                              | 0.86                                                                              | 0.85                                                                              | 0.45                                                                              | 0.45                                                                              | 0.14                                                                               | 0.03                                                                                | 0.78                                                                                | 0.25                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 131                                                                               | 815                                                                               | 809                                                                               | 730                                                                               | 1059                                                                              | 1080                                                                              | 523                                                                                | 622                                                                                 | 548                                                                                 | 396                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 39.4                                                                              | 20.5                                                                              | 20.6                                                                              | 32.7                                                                              | 9.4                                                                               | 9.4                                                                               | 28.3                                                                               | 27.3                                                                                | 31.8                                                                                | 28.4                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 8.9                                                                               | 8.4                                                                               | 8.9                                                                               | 8.1                                                                               | 0.3                                                                               | 0.3                                                                               | 0.2                                                                                | 0.0                                                                                 | 4.5                                                                                 | 0.8                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.9                                                                               | 15.4                                                                              | 15.5                                                                              | 6.5                                                                               | 5.9                                                                               | 6.0                                                                               | 0.8                                                                                | 0.2                                                                                 | 5.4                                                                                 | 0.9                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 48.3                                                                              | 28.9                                                                              | 29.5                                                                              | 40.8                                                                              | 9.7                                                                               | 9.7                                                                               | 28.5                                                                               | 27.4                                                                                | 36.4                                                                                | 29.2                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | A                                                                                 | A                                                                                 | C                                                                                  | C                                                                                   | D                                                                                   | C                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          | 1369                                                                              |                                                                                   |                                                                                   |                                                                                   | 1466                                                                              |                                                                                   | 284                                                                                |                                                                                     |                                                                                     |                                                                                     | 44                                                                                  |                                                                                     |
| Approach Delay, s/veh        | 29.7                                                                              |                                                                                   |                                                                                   |                                                                                   | 20.8                                                                              |                                                                                   | 34.8                                                                               |                                                                                     |                                                                                     |                                                                                     | 29.2                                                                                |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   | C                                                                                  |                                                                                     |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 4                                                                                 |                                                                                   | 5                                                                                 | 6                                                                                 | 8                                                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 19.3                                                                              | 42.6                                                                              | 20.6                                                                              |                                                                                   | 7.2                                                                               | 54.8                                                                              | 20.6                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.5                                                                               | 6.0                                                                               | 5.0                                                                               |                                                                                   | 4.5                                                                               | 6.0                                                                               | 5.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 17.5                                                                              | 38.0                                                                              | 29.0                                                                              |                                                                                   | 6.1                                                                               | 49.4                                                                              | 29.0                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 14.2                                                                              | 30.2                                                                              | 13.9                                                                              |                                                                                   | 3.5                                                                               | 14.1                                                                              | 13.6                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.7                                                                               | 6.4                                                                               | 1.5                                                                               |                                                                                   | 0.0                                                                               | 19.5                                                                              | 1.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 26.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 2: Via Del Campo & Rancho Bernardo Rd

3/17/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 10                                                                                | 1081                                                                              | 390                                                                               | 704                                                                               | 1338                                                                              | 10                                                                                | 80                                                                                 | 10                                                                                  | 61                                                                                  | 10                                                                                  | 10                                                                                  | 10                                                                                  |
| Future Volume (veh/h)        | 10                                                                                | 1081                                                                              | 390                                                                               | 704                                                                               | 1338                                                                              | 10                                                                                | 80                                                                                 | 10                                                                                  | 61                                                                                  | 10                                                                                  | 10                                                                                  | 10                                                                                  |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.98                                                                              | 1.00                                                                              |                                                                                   | 0.98                                                                              | 1.00                                                                               |                                                                                     | 0.99                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1900                                                                               | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 11                                                                                | 1175                                                                              | 424                                                                               | 765                                                                               | 1454                                                                              | 11                                                                                | 87                                                                                 | 11                                                                                  | 66                                                                                  | 11                                                                                  | 11                                                                                  | 11                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 0                                                                                  | 1                                                                                   | 1                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 18                                                                                | 1030                                                                              | 361                                                                               | 611                                                                               | 2657                                                                              | 20                                                                                | 157                                                                                | 17                                                                                  | 222                                                                                 | 45                                                                                  | 44                                                                                  | 28                                                                                  |
| Arrive On Green              | 0.01                                                                              | 0.40                                                                              | 0.40                                                                              | 0.34                                                                              | 0.74                                                                              | 0.74                                                                              | 0.14                                                                               | 0.14                                                                                | 0.14                                                                                | 0.14                                                                                | 0.14                                                                                | 0.14                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 2554                                                                              | 896                                                                               | 1774                                                                              | 3600                                                                              | 27                                                                                | 764                                                                                | 120                                                                                 | 1562                                                                                | 79                                                                                  | 309                                                                                 | 194                                                                                 |
| Grp Volume(v), veh/h         | 11                                                                                | 804                                                                               | 795                                                                               | 765                                                                               | 715                                                                               | 750                                                                               | 98                                                                                 | 0                                                                                   | 66                                                                                  | 33                                                                                  | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1680                                                                              | 1774                                                                              | 1770                                                                              | 1857                                                                              | 884                                                                                | 0                                                                                   | 1562                                                                                | 583                                                                                 | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.9                                                                               | 56.9                                                                              | 56.9                                                                              | 48.6                                                                              | 25.0                                                                              | 25.0                                                                              | 0.0                                                                                | 0.0                                                                                 | 5.3                                                                                 | 0.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.9                                                                               | 56.9                                                                              | 56.9                                                                              | 48.6                                                                              | 25.0                                                                              | 25.0                                                                              | 17.0                                                                               | 0.0                                                                                 | 5.3                                                                                 | 17.2                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.53                                                                              | 1.00                                                                              |                                                                                   | 0.01                                                                              | 0.89                                                                               |                                                                                     | 1.00                                                                                | 0.33                                                                                |                                                                                     | 0.33                                                                                |
| Lane Grp Cap(c), veh/h       | 18                                                                                | 714                                                                               | 678                                                                               | 611                                                                               | 1306                                                                              | 1371                                                                              | 174                                                                                | 0                                                                                   | 222                                                                                 | 117                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.62                                                                              | 1.13                                                                              | 1.17                                                                              | 1.25                                                                              | 0.55                                                                              | 0.55                                                                              | 0.56                                                                               | 0.00                                                                                | 0.30                                                                                | 0.28                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 50                                                                                | 714                                                                               | 678                                                                               | 611                                                                               | 1306                                                                              | 1371                                                                              | 264                                                                                | 0                                                                                   | 321                                                                                 | 219                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 69.6                                                                              | 42.1                                                                              | 42.1                                                                              | 46.2                                                                              | 8.1                                                                               | 8.1                                                                               | 59.0                                                                               | 0.0                                                                                 | 54.2                                                                                | 53.5                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 31.0                                                                              | 73.8                                                                              | 93.0                                                                              | 126.2                                                                             | 0.5                                                                               | 0.5                                                                               | 2.9                                                                                | 0.0                                                                                 | 0.7                                                                                 | 1.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.6                                                                               | 42.4                                                                              | 43.9                                                                              | 45.2                                                                              | 12.3                                                                              | 12.9                                                                              | 3.9                                                                                | 0.0                                                                                 | 2.4                                                                                 | 1.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 100.6                                                                             | 115.9                                                                             | 135.1                                                                             | 172.4                                                                             | 8.6                                                                               | 8.6                                                                               | 61.9                                                                               | 0.0                                                                                 | 54.9                                                                                | 54.8                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | F                                                                                 | F                                                                                 | F                                                                                 | F                                                                                 | A                                                                                 | A                                                                                 | E                                                                                  |                                                                                     | D                                                                                   | D                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1610                                                                              |                                                                                   |                                                                                   | 2230                                                                              |                                                                                   |                                                                                    | 164                                                                                 |                                                                                     |                                                                                     | 33                                                                                  |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 125.3                                                                             |                                                                                   |                                                                                   | 64.8                                                                              |                                                                                   |                                                                                    | 59.1                                                                                |                                                                                     |                                                                                     | 54.8                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                    | E                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 53.0                                                                              | 62.8                                                                              |                                                                                   | 25.2                                                                              | 5.8                                                                               | 110.0                                                                             |                                                                                    | 25.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.4                                                                               | 5.9                                                                               |                                                                                   | * 5.2                                                                             | 4.4                                                                               | * 5.9                                                                             |                                                                                    | 5.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 48.6                                                                              | 56.9                                                                              |                                                                                   | * 29                                                                              | 4.0                                                                               | * 1E2                                                                             |                                                                                    | 29.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 50.6                                                                              | 58.9                                                                              |                                                                                   | 19.2                                                                              | 2.9                                                                               | 27.0                                                                              |                                                                                    | 19.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.6                                                                               | 0.0                                                                               | 47.8                                                                              |                                                                                    | 0.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 88.6                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 3: Project Dwy/Matinal Rd & Rancho Bernardo Rd

3/17/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 40                                                                                | 920                                                                               | 107                                                                               | 329                                                                               | 1770                                                                              | 20                                                                                | 12                                                                                 | 1                                                                                   | 37                                                                                  | 90                                                                                  | 9                                                                                   | 150                                                                                 |
| Future Volume (veh/h)        | 40                                                                                | 920                                                                               | 107                                                                               | 329                                                                               | 1770                                                                              | 20                                                                                | 12                                                                                 | 1                                                                                   | 37                                                                                  | 90                                                                                  | 9                                                                                   | 150                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.98                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 43                                                                                | 1000                                                                              | 116                                                                               | 358                                                                               | 1924                                                                              | 22                                                                                | 13                                                                                 | 1                                                                                   | 40                                                                                  | 98                                                                                  | 10                                                                                  | 163                                                                                 |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                  | 1                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 54                                                                                | 1140                                                                              | 132                                                                               | 416                                                                               | 2130                                                                              | 24                                                                                | 264                                                                                | 8                                                                                   | 327                                                                                 | 156                                                                                 | 27                                                                                  | 192                                                                                 |
| Arrive On Green              | 0.03                                                                              | 0.36                                                                              | 0.36                                                                              | 0.23                                                                              | 0.59                                                                              | 0.59                                                                              | 0.21                                                                               | 0.21                                                                                | 0.21                                                                                | 0.21                                                                                | 0.21                                                                                | 0.21                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 3196                                                                              | 371                                                                               | 1774                                                                              | 3584                                                                              | 41                                                                                | 1207                                                                               | 39                                                                                  | 1550                                                                                | 476                                                                                 | 126                                                                                 | 908                                                                                 |
| Grp Volume(v), veh/h         | 43                                                                                | 553                                                                               | 563                                                                               | 358                                                                               | 948                                                                               | 998                                                                               | 13                                                                                 | 0                                                                                   | 41                                                                                  | 271                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1797                                                                              | 1774                                                                              | 1770                                                                              | 1856                                                                              | 1207                                                                               | 0                                                                                   | 1589                                                                                | 1510                                                                                | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 2.1                                                                               | 26.1                                                                              | 26.1                                                                              | 17.2                                                                              | 41.7                                                                              | 42.0                                                                              | 0.0                                                                                | 0.0                                                                                 | 1.9                                                                                 | 13.1                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 2.1                                                                               | 26.1                                                                              | 26.1                                                                              | 17.2                                                                              | 41.7                                                                              | 42.0                                                                              | 1.2                                                                                | 0.0                                                                                 | 1.9                                                                                 | 15.3                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.21                                                                              | 1.00                                                                              |                                                                                   | 0.02                                                                              | 1.00                                                                               |                                                                                     | 0.98                                                                                | 0.36                                                                                |                                                                                     | 0.60                                                                                |
| Lane Grp Cap(c), veh/h       | 54                                                                                | 631                                                                               | 641                                                                               | 416                                                                               | 1052                                                                              | 1103                                                                              | 264                                                                                | 0                                                                                   | 336                                                                                 | 374                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.80                                                                              | 0.88                                                                              | 0.88                                                                              | 0.86                                                                              | 0.90                                                                              | 0.91                                                                              | 0.05                                                                               | 0.00                                                                                | 0.12                                                                                | 0.72                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 80                                                                                | 704                                                                               | 715                                                                               | 419                                                                               | 1062                                                                              | 1113                                                                              | 397                                                                                | 0                                                                                   | 511                                                                                 | 528                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 42.9                                                                              | 26.8                                                                              | 26.8                                                                              | 32.7                                                                              | 15.8                                                                              | 15.9                                                                              | 28.2                                                                               | 0.0                                                                                 | 28.4                                                                                | 33.6                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 27.6                                                                              | 11.2                                                                              | 11.1                                                                              | 16.5                                                                              | 10.5                                                                              | 10.5                                                                              | 0.1                                                                                | 0.0                                                                                 | 0.2                                                                                 | 2.9                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 1.5                                                                               | 14.6                                                                              | 14.8                                                                              | 10.4                                                                              | 23.1                                                                              | 24.6                                                                              | 0.3                                                                                | 0.0                                                                                 | 0.8                                                                                 | 6.7                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 70.5                                                                              | 38.0                                                                              | 37.9                                                                              | 49.2                                                                              | 26.3                                                                              | 26.3                                                                              | 28.2                                                                               | 0.0                                                                                 | 28.6                                                                                | 36.5                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | E                                                                                 | D                                                                                 | D                                                                                 | D                                                                                 | C                                                                                 | C                                                                                 | C                                                                                  |                                                                                     | C                                                                                   | D                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1159                                                                              |                                                                                   |                                                                                   | 2304                                                                              |                                                                                   |                                                                                    | 54                                                                                  |                                                                                     |                                                                                     | 271                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 39.2                                                                              |                                                                                   |                                                                                   | 29.9                                                                              |                                                                                   |                                                                                    | 28.5                                                                                |                                                                                     |                                                                                     | 36.5                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 26.8                                                                              | 38.8                                                                              |                                                                                   | 23.4                                                                              | 6.7                                                                               | 58.9                                                                              |                                                                                    | 23.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 6.0                                                                               | * 7                                                                               |                                                                                   | 4.6                                                                               | 4.0                                                                               | 6.0                                                                               |                                                                                    | * 4.6                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 21.0                                                                              | * 35                                                                              |                                                                                   | 28.0                                                                              | 4.0                                                                               | 53.4                                                                              |                                                                                    | * 29                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 19.2                                                                              | 28.1                                                                              |                                                                                   | 17.3                                                                              | 4.1                                                                               | 44.0                                                                              |                                                                                    | 3.9                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 1.6                                                                               | 3.7                                                                               |                                                                                   | 1.5                                                                               | 0.0                                                                               | 7.8                                                                               |                                                                                    | 2.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 33.2                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# HCM 2010 Signalized Intersection Summary

## 4: West Bernardo Dr & Rancho Bernardo Rd

3/17/2016

|                              |  |  |  |  |  |   |   |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                                | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |  |  |  |                                                                                     |
| Traffic Volume (veh/h)       | 62                                                                                | 763                                                                               | 103                                                                               | 610                                                                               | 1944                                                                              | 300                                                                                | 162                                                                                 | 90                                                                                  | 180                                                                                 | 680                                                                                 | 370                                                                                 | 183                                                                                 |
| Future Volume (veh/h)        | 62                                                                                | 763                                                                               | 103                                                                               | 610                                                                               | 1944                                                                              | 300                                                                                | 162                                                                                 | 90                                                                                  | 180                                                                                 | 680                                                                                 | 370                                                                                 | 183                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                 | 3                                                                                   | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.99                                                                               | 1.00                                                                                |                                                                                     | 0.99                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                               | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 64                                                                                | 787                                                                               | 106                                                                               | 629                                                                               | 2004                                                                              | 309                                                                                | 167                                                                                 | 93                                                                                  | 186                                                                                 | 701                                                                                 | 381                                                                                 | 189                                                                                 |
| Adj No. of Lanes             | 2                                                                                 | 3                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 | 1                                                                                  | 2                                                                                   | 2                                                                                   | 1                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                              | 0.97                                                                               | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                | 0.97                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 107                                                                               | 992                                                                               | 133                                                                               | 868                                                                               | 1603                                                                              | 707                                                                                | 240                                                                                 | 406                                                                                 | 579                                                                                 | 783                                                                                 | 628                                                                                 | 307                                                                                 |
| Arrive On Green              | 0.03                                                                              | 0.22                                                                              | 0.22                                                                              | 0.25                                                                              | 0.45                                                                              | 0.45                                                                               | 0.07                                                                                | 0.11                                                                                | 0.11                                                                                | 0.23                                                                                | 0.27                                                                                | 0.27                                                                                |
| Sat Flow, veh/h              | 3442                                                                              | 4538                                                                              | 607                                                                               | 3442                                                                              | 3539                                                                              | 1562                                                                               | 3442                                                                                | 3539                                                                                | 1561                                                                                | 3442                                                                                | 2302                                                                                | 1126                                                                                |
| Grp Volume(v), veh/h         | 64                                                                                | 587                                                                               | 306                                                                               | 629                                                                               | 2004                                                                              | 309                                                                                | 167                                                                                 | 93                                                                                  | 186                                                                                 | 701                                                                                 | 292                                                                                 | 278                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1695                                                                              | 1756                                                                              | 1721                                                                              | 1770                                                                              | 1562                                                                               | 1721                                                                                | 1770                                                                                | 1561                                                                                | 1721                                                                                | 1770                                                                                | 1658                                                                                |
| Q Serve(g_s), s              | 2.1                                                                               | 18.7                                                                              | 18.9                                                                              | 19.2                                                                              | 51.9                                                                              | 15.5                                                                               | 5.4                                                                                 | 2.7                                                                                 | 4.1                                                                                 | 22.6                                                                                | 16.4                                                                                | 16.8                                                                                |
| Cycle Q Clear(g_c), s        | 2.1                                                                               | 18.7                                                                              | 18.9                                                                              | 19.2                                                                              | 51.9                                                                              | 15.5                                                                               | 5.4                                                                                 | 2.7                                                                                 | 4.1                                                                                 | 22.6                                                                                | 16.4                                                                                | 16.8                                                                                |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.35                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                               | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.68                                                                                |
| Lane Grp Cap(c), veh/h       | 107                                                                               | 741                                                                               | 384                                                                               | 868                                                                               | 1603                                                                              | 707                                                                                | 240                                                                                 | 406                                                                                 | 579                                                                                 | 783                                                                                 | 483                                                                                 | 452                                                                                 |
| V/C Ratio(X)                 | 0.60                                                                              | 0.79                                                                              | 0.80                                                                              | 0.72                                                                              | 1.25                                                                              | 0.44                                                                               | 0.70                                                                                | 0.23                                                                                | 0.32                                                                                | 0.90                                                                                | 0.60                                                                                | 0.62                                                                                |
| Avail Cap(c_a), veh/h        | 120                                                                               | 911                                                                               | 472                                                                               | 868                                                                               | 1603                                                                              | 707                                                                                | 1024                                                                                | 1207                                                                                | 932                                                                                 | 904                                                                                 | 542                                                                                 | 508                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 54.8                                                                              | 42.3                                                                              | 42.4                                                                              | 39.2                                                                              | 31.4                                                                              | 21.4                                                                               | 52.1                                                                                | 46.1                                                                                | 9.3                                                                                 | 42.9                                                                                | 36.3                                                                                | 36.4                                                                                |
| Incr Delay (d2), s/veh       | 6.4                                                                               | 3.9                                                                               | 7.7                                                                               | 3.0                                                                               | 118.0                                                                             | 0.4                                                                                | 3.6                                                                                 | 0.3                                                                                 | 0.3                                                                                 | 10.4                                                                                | 1.6                                                                                 | 1.8                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 1.1                                                                               | 9.2                                                                               | 10.0                                                                              | 9.5                                                                               | 51.4                                                                              | 6.8                                                                                | 2.7                                                                                 | 1.4                                                                                 | 2.1                                                                                 | 11.9                                                                                | 8.2                                                                                 | 8.0                                                                                 |
| LnGrp Delay(d),s/veh         | 61.2                                                                              | 46.2                                                                              | 50.1                                                                              | 42.2                                                                              | 149.4                                                                             | 21.8                                                                               | 55.8                                                                                | 46.4                                                                                | 9.7                                                                                 | 53.4                                                                                | 37.8                                                                                | 38.3                                                                                |
| LnGrp LOS                    | E                                                                                 | D                                                                                 | D                                                                                 | D                                                                                 | F                                                                                 | C                                                                                  | E                                                                                   | D                                                                                   | A                                                                                   | D                                                                                   | D                                                                                   | D                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 957                                                                               |                                                                                   |                                                                                   | 2942                                                                              |                                                                                    |                                                                                     | 446                                                                                 |                                                                                     |                                                                                     | 1271                                                                                |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 48.5                                                                              |                                                                                   |                                                                                   | 113.1                                                                             |                                                                                    |                                                                                     | 34.6                                                                                |                                                                                     |                                                                                     | 46.5                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | F                                                                                 |                                                                                    |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                  | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                  | 7                                                                                   | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 34.6                                                                              | 31.0                                                                              | 12.4                                                                              | 36.7                                                                              | 8.0                                                                               | 57.6                                                                               | 30.5                                                                                | 18.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.7                                                                               | * 5.9                                                                             | 4.4                                                                               | 5.4                                                                               | 4.4                                                                               | 5.7                                                                                | 4.4                                                                                 | 5.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 24.9                                                                              | * 31                                                                              | 34.1                                                                              | 35.1                                                                              | 4.0                                                                               | 51.9                                                                               | 30.1                                                                                | 39.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 21.2                                                                              | 20.9                                                                              | 7.4                                                                               | 18.8                                                                              | 4.1                                                                               | 53.9                                                                               | 24.6                                                                                | 6.1                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 3.6                                                                               | 4.1                                                                               | 0.5                                                                               | 4.5                                                                               | 0.0                                                                               | 0.0                                                                                | 1.4                                                                                 | 5.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 80.8                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 5: I-15 SB Ramps & Rancho Bernardo Rd

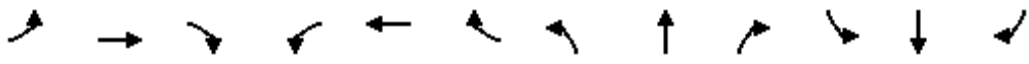
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|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |                                                                                   |  |  |                                                                                    |                                                                                     |                                                                                     |  |                                                                                     |  |
| Traffic Volume (veh/h)       | 0                                                                                 | 878                                                                               | 716                                                                               | 0                                                                                 | 1552                                                                              | 560                                                                               | 0                                                                                  | 0                                                                                   | 0                                                                                   | 760                                                                                 | 0                                                                                   | 1281                                                                                |
| Future Volume (veh/h)        | 0                                                                                 | 878                                                                               | 716                                                                               | 0                                                                                 | 1552                                                                              | 560                                                                               | 0                                                                                  | 0                                                                                   | 0                                                                                   | 760                                                                                 | 0                                                                                   | 1281                                                                                |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                |                                                                                    |                                                                                     |                                                                                     | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 0                                                                                 | 1863                                                                              | 1863                                                                              | 0                                                                                 | 1863                                                                              | 1863                                                                              |                                                                                    |                                                                                     |                                                                                     | 1863                                                                                | 0                                                                                   | 1863                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 924                                                                               | 754                                                                               | 0                                                                                 | 1634                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 800                                                                                 | 0                                                                                   | 1348                                                                                |
| Adj No. of Lanes             | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 3                                                                                 | 1                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 2                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.95                                                                              | 0.95                                                                              | 0.92                                                                              | 0.95                                                                              | 0.95                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.95                                                                                | 0.92                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %         | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 0                                                                                 | 1453                                                                              | 1235                                                                              | 0                                                                                 | 2179                                                                              | 617                                                                               |                                                                                    |                                                                                     |                                                                                     | 1669                                                                                | 0                                                                                   | 1352                                                                                |
| Arrive On Green              | 0.00                                                                              | 0.39                                                                              | 0.39                                                                              | 0.00                                                                              | 0.78                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.48                                                                                | 0.00                                                                                | 0.48                                                                                |
| Sat Flow, veh/h              | 0                                                                                 | 3725                                                                              | 3167                                                                              | 0                                                                                 | 5588                                                                              | 1583                                                                              |                                                                                    |                                                                                     |                                                                                     | 3442                                                                                | 0                                                                                   | 2787                                                                                |
| Grp Volume(v), veh/h         | 0                                                                                 | 924                                                                               | 754                                                                               | 0                                                                                 | 1634                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 800                                                                                 | 0                                                                                   | 1348                                                                                |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1863                                                                              | 1583                                                                              | 0                                                                                 | 1863                                                                              | 1583                                                                              |                                                                                    |                                                                                     |                                                                                     | 1721                                                                                | 0                                                                                   | 1393                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 20.1                                                                              | 19.1                                                                              | 0.0                                                                               | 15.5                                                                              | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 15.6                                                                                | 0.0                                                                                 | 48.3                                                                                |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 20.1                                                                              | 19.1                                                                              | 0.0                                                                               | 15.5                                                                              | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 15.6                                                                                | 0.0                                                                                 | 48.3                                                                                |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 1.00                                                                              | 0.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 1453                                                                              | 1235                                                                              | 0                                                                                 | 2179                                                                              | 617                                                                               |                                                                                    |                                                                                     |                                                                                     | 1669                                                                                | 0                                                                                   | 1352                                                                                |
| V/C Ratio(X)                 | 0.00                                                                              | 0.64                                                                              | 0.61                                                                              | 0.00                                                                              | 0.75                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.48                                                                                | 0.00                                                                                | 1.00                                                                                |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 1453                                                                              | 1235                                                                              | 0                                                                                 | 2179                                                                              | 618                                                                               |                                                                                    |                                                                                     |                                                                                     | 1669                                                                                | 0                                                                                   | 1352                                                                                |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                              | 2.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.00                                                                              | 0.60                                                                              | 0.60                                                                              | 0.00                                                                              | 0.76                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 24.7                                                                              | 24.4                                                                              | 0.0                                                                               | 8.4                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 17.3                                                                                | 0.0                                                                                 | 25.7                                                                                |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 1.3                                                                               | 1.3                                                                               | 0.0                                                                               | 1.8                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.2                                                                                 | 0.0                                                                                 | 23.8                                                                                |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 10.5                                                                              | 8.5                                                                               | 0.0                                                                               | 7.9                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 7.4                                                                                 | 0.0                                                                                 | 22.8                                                                                |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 26.0                                                                              | 25.8                                                                              | 0.0                                                                               | 10.3                                                                              | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 17.5                                                                                | 0.0                                                                                 | 49.5                                                                                |
| LnGrp LOS                    |                                                                                   | C                                                                                 | C                                                                                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     | B                                                                                   |                                                                                     | D                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 1678                                                                              |                                                                                   |                                                                                   | 1634                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 2148                                                                                |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 25.9                                                                              |                                                                                   |                                                                                   | 10.3                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 37.6                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 45.4                                                                              |                                                                                   | 54.6                                                                              |                                                                                   | 45.4                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 6.4                                                                               |                                                                                   | 6.1                                                                               |                                                                                   | 6.4                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 39.0                                                                              |                                                                                   | 48.5                                                                              |                                                                                   | 39.0                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 22.1                                                                              |                                                                                   | 50.3                                                                              |                                                                                   | 17.5                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 15.3                                                                              |                                                                                   | 0.0                                                                               |                                                                                   | 19.0                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 25.8                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 6: I-15 NB Ramps & Rancho Bernardo Rd

3/17/2016

|                              |  |      |      |      |      |      |      |      |      |     |     |     |
|------------------------------|------------------------------------------------------------------------------------|------|------|------|------|------|------|------|------|-----|-----|-----|
| Movement                     | EBL                                                                                | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL | SBT | SBR |
| Lane Configurations          |                                                                                    | ↑↑↑  | ↑    |      | ↑↑↑  | ↑    | ↑↑   |      | ↑↑   |     |     |     |
| Traffic Volume (veh/h)       | 0                                                                                  | 955  | 683  | 0    | 1245 | 320  | 868  | 0    | 510  | 0   | 0   | 0   |
| Future Volume (veh/h)        | 0                                                                                  | 955  | 683  | 0    | 1245 | 320  | 868  | 0    | 510  | 0   | 0   | 0   |
| Number                       | 5                                                                                  | 2    | 12   | 1    | 6    | 16   | 3    | 8    | 18   |     |     |     |
| Initial Q (Qb), veh          | 0                                                                                  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |     |     |     |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                               |      | 1.00 | 1.00 |      | 1.00 | 1.00 |      | 1.00 |     |     |     |
| Parking Bus, Adj             | 1.00                                                                               | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |     |     |     |
| Adj Sat Flow, veh/h/ln       | 0                                                                                  | 1863 | 1863 | 0    | 1863 | 1863 | 1863 | 0    | 1863 |     |     |     |
| Adj Flow Rate, veh/h         | 0                                                                                  | 1016 | 0    | 0    | 1324 | 340  | 923  | 0    | 543  |     |     |     |
| Adj No. of Lanes             | 0                                                                                  | 3    | 1    | 0    | 3    | 1    | 2    | 0    | 2    |     |     |     |
| Peak Hour Factor             | 0.92                                                                               | 0.94 | 0.94 | 0.92 | 0.94 | 0.94 | 0.94 | 0.92 | 0.94 |     |     |     |
| Percent Heavy Veh, %         | 0                                                                                  | 2    | 2    | 0    | 2    | 2    | 2    | 0    | 2    |     |     |     |
| Cap, veh/h                   | 0                                                                                  | 3103 | 879  | 0    | 2824 | 879  | 1100 | 0    | 891  |     |     |     |
| Arrive On Green              | 0.00                                                                               | 1.00 | 0.00 | 0.00 | 0.56 | 0.56 | 0.32 | 0.00 | 0.32 |     |     |     |
| Sat Flow, veh/h              | 0                                                                                  | 5588 | 1583 | 0    | 5253 | 1583 | 3442 | 0    | 2787 |     |     |     |
| Grp Volume(v), veh/h         | 0                                                                                  | 1016 | 0    | 0    | 1324 | 340  | 923  | 0    | 543  |     |     |     |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                  | 1863 | 1583 | 0    | 1695 | 1583 | 1721 | 0    | 1393 |     |     |     |
| Q Serve(g_s), s              | 0.0                                                                                | 0.0  | 0.0  | 0.0  | 15.7 | 12.2 | 24.9 | 0.0  | 16.5 |     |     |     |
| Cycle Q Clear(g_c), s        | 0.0                                                                                | 0.0  | 0.0  | 0.0  | 15.7 | 12.2 | 24.9 | 0.0  | 16.5 |     |     |     |
| Prop In Lane                 | 0.00                                                                               |      | 1.00 | 0.00 |      | 1.00 | 1.00 |      | 1.00 |     |     |     |
| Lane Grp Cap(c), veh/h       | 0                                                                                  | 3103 | 879  | 0    | 2824 | 879  | 1100 | 0    | 891  |     |     |     |
| V/C Ratio(X)                 | 0.00                                                                               | 0.33 | 0.00 | 0.00 | 0.47 | 0.39 | 0.84 | 0.00 | 0.61 |     |     |     |
| Avail Cap(c_a), veh/h        | 0                                                                                  | 3103 | 879  | 0    | 2824 | 879  | 1339 | 0    | 1084 |     |     |     |
| HCM Platoon Ratio            | 1.00                                                                               | 2.00 | 2.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |     |     |     |
| Upstream Filter(I)           | 0.00                                                                               | 0.74 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |     |     |     |
| Uniform Delay (d), s/veh     | 0.0                                                                                | 0.0  | 0.0  | 0.0  | 13.4 | 12.6 | 31.6 | 0.0  | 28.7 |     |     |     |
| Incr Delay (d2), s/veh       | 0.0                                                                                | 0.2  | 0.0  | 0.0  | 0.6  | 1.3  | 4.1  | 0.0  | 0.7  |     |     |     |
| Initial Q Delay(d3),s/veh    | 0.0                                                                                | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |     |     |     |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                                | 0.1  | 0.0  | 0.0  | 7.4  | 5.6  | 12.4 | 0.0  | 6.4  |     |     |     |
| LnGrp Delay(d),s/veh         | 0.0                                                                                | 0.2  | 0.0  | 0.0  | 13.9 | 13.9 | 35.8 | 0.0  | 29.4 |     |     |     |
| LnGrp LOS                    |                                                                                    | A    |      |      | B    | B    | D    |      | C    |     |     |     |
| Approach Vol, veh/h          |                                                                                    | 1016 |      |      | 1664 |      |      | 1466 |      |     |     |     |
| Approach Delay, s/veh        |                                                                                    | 0.2  |      |      | 13.9 |      |      | 33.4 |      |     |     |     |
| Approach LOS                 |                                                                                    | A    |      |      | B    |      |      | C    |      |     |     |     |
| Timer                        | 1                                                                                  | 2    | 3    | 4    | 5    | 6    | 7    | 8    |      |     |     |     |
| Assigned Phs                 |                                                                                    | 2    |      |      |      | 6    |      | 8    |      |     |     |     |
| Phs Duration (G+Y+Rc), s     |                                                                                    | 61.9 |      |      |      | 61.9 |      | 38.1 |      |     |     |     |
| Change Period (Y+Rc), s      |                                                                                    | 6.4  |      |      |      | 6.4  |      | 6.1  |      |     |     |     |
| Max Green Setting (Gmax), s  |                                                                                    | 48.6 |      |      |      | 48.6 |      | 38.9 |      |     |     |     |
| Max Q Clear Time (g_c+I1), s |                                                                                    | 2.0  |      |      |      | 17.7 |      | 26.9 |      |     |     |     |
| Green Ext Time (p_c), s      |                                                                                    | 29.6 |      |      |      | 22.4 |      | 5.0  |      |     |     |     |
| <b>Intersection Summary</b>  |                                                                                    |      |      |      |      |      |      |      |      |     |     |     |
| HCM 2010 Ctrl Delay          |                                                                                    |      |      | 17.5 |      |      |      |      |      |     |     |     |
| HCM 2010 LOS                 |                                                                                    |      |      | B    |      |      |      |      |      |     |     |     |
| <b>Notes</b>                 |                                                                                    |      |      |      |      |      |      |      |      |     |     |     |

# HCM 2010 Signalized Intersection Summary

## 7: Bernardo Center Dr & Rancho Bernardo Rd

3/17/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |                                                                                   |  |  |                                                                                     |  |  |  |
| Traffic Volume (veh/h)       | 361                                                                               | 653                                                                               | 351                                                                               | 180                                                                               | 897                                                                               | 100                                                                               | 279                                                                                | 200                                                                                 | 120                                                                                 | 230                                                                                 | 310                                                                                 | 139                                                                                 |
| Future Volume (veh/h)        | 361                                                                               | 653                                                                               | 351                                                                               | 180                                                                               | 897                                                                               | 100                                                                               | 279                                                                                | 200                                                                                 | 120                                                                                 | 230                                                                                 | 310                                                                                 | 139                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.98                                                                              | 1.00                                                                               |                                                                                     | 0.99                                                                                | 1.00                                                                                |                                                                                     | 0.99                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h         | 388                                                                               | 728                                                                               | 360                                                                               | 194                                                                               | 965                                                                               | 108                                                                               | 300                                                                                | 215                                                                                 | 129                                                                                 | 247                                                                                 | 333                                                                                 | 149                                                                                 |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 | 1                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                  | 2                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                              | 0.93                                                                               | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                | 0.93                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 466                                                                               | 1548                                                                              | 658                                                                               | 266                                                                               | 1159                                                                              | 130                                                                               | 369                                                                                | 407                                                                                 | 234                                                                                 | 328                                                                                 | 624                                                                                 | 483                                                                                 |
| Arrive On Green              | 0.13                                                                              | 0.42                                                                              | 0.42                                                                              | 0.08                                                                              | 0.36                                                                              | 0.36                                                                              | 0.11                                                                               | 0.19                                                                                | 0.19                                                                                | 0.10                                                                                | 0.18                                                                                | 0.18                                                                                |
| Sat Flow, veh/h              | 3548                                                                              | 3725                                                                              | 1583                                                                              | 3442                                                                              | 3204                                                                              | 359                                                                               | 3442                                                                               | 2160                                                                                | 1241                                                                                | 3442                                                                                | 3539                                                                                | 1560                                                                                |
| Grp Volume(v), veh/h         | 388                                                                               | 728                                                                               | 360                                                                               | 194                                                                               | 533                                                                               | 540                                                                               | 300                                                                                | 174                                                                                 | 170                                                                                 | 247                                                                                 | 333                                                                                 | 149                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1721                                                                              | 1770                                                                              | 1793                                                                              | 1721                                                                               | 1770                                                                                | 1632                                                                                | 1721                                                                                | 1770                                                                                | 1560                                                                                |
| Q Serve(g_s), s              | 10.0                                                                              | 13.3                                                                              | 16.1                                                                              | 5.2                                                                               | 25.7                                                                              | 25.7                                                                              | 8.0                                                                                | 8.3                                                                                 | 8.8                                                                                 | 6.5                                                                                 | 8.0                                                                                 | 6.8                                                                                 |
| Cycle Q Clear(g_c), s        | 10.0                                                                              | 13.3                                                                              | 16.1                                                                              | 5.2                                                                               | 25.7                                                                              | 25.7                                                                              | 8.0                                                                                | 8.3                                                                                 | 8.8                                                                                 | 6.5                                                                                 | 8.0                                                                                 | 6.8                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.20                                                                              | 1.00                                                                               |                                                                                     | 0.76                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 466                                                                               | 1548                                                                              | 658                                                                               | 266                                                                               | 640                                                                               | 648                                                                               | 369                                                                                | 333                                                                                 | 307                                                                                 | 328                                                                                 | 624                                                                                 | 483                                                                                 |
| V/C Ratio(X)                 | 0.83                                                                              | 0.47                                                                              | 0.55                                                                              | 0.73                                                                              | 0.83                                                                              | 0.83                                                                              | 0.81                                                                               | 0.52                                                                                | 0.55                                                                                | 0.75                                                                                | 0.53                                                                                | 0.31                                                                                |
| Avail Cap(c_a), veh/h        | 531                                                                               | 1557                                                                              | 662                                                                               | 346                                                                               | 670                                                                               | 678                                                                               | 390                                                                                | 698                                                                                 | 644                                                                                 | 526                                                                                 | 1513                                                                                | 875                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 39.6                                                                              | 19.9                                                                              | 20.7                                                                              | 42.2                                                                              | 27.3                                                                              | 27.3                                                                              | 40.8                                                                               | 34.2                                                                                | 34.4                                                                                | 41.2                                                                                | 35.0                                                                                | 24.8                                                                                |
| Incr Delay (d2), s/veh       | 9.8                                                                               | 0.2                                                                               | 0.9                                                                               | 5.4                                                                               | 8.5                                                                               | 8.5                                                                               | 11.8                                                                               | 1.3                                                                                 | 1.5                                                                                 | 3.5                                                                                 | 0.7                                                                                 | 0.4                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 5.5                                                                               | 6.8                                                                               | 7.1                                                                               | 2.7                                                                               | 14.1                                                                              | 14.3                                                                              | 4.4                                                                                | 4.2                                                                                 | 4.1                                                                                 | 3.3                                                                                 | 4.0                                                                                 | 3.0                                                                                 |
| LnGrp Delay(d),s/veh         | 49.5                                                                              | 20.1                                                                              | 21.6                                                                              | 47.6                                                                              | 35.8                                                                              | 35.7                                                                              | 52.6                                                                               | 35.5                                                                                | 35.9                                                                                | 44.7                                                                                | 35.7                                                                                | 25.2                                                                                |
| LnGrp LOS                    | D                                                                                 | C                                                                                 | C                                                                                 | D                                                                                 | D                                                                                 | D                                                                                 | D                                                                                  | D                                                                                   | D                                                                                   | D                                                                                   | D                                                                                   | C                                                                                   |
| Approach Vol, veh/h          | 1476                                                                              |                                                                                   |                                                                                   |                                                                                   | 1267                                                                              |                                                                                   |                                                                                    |                                                                                     | 644                                                                                 |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 28.2                                                                              |                                                                                   |                                                                                   |                                                                                   | 37.6                                                                              |                                                                                   |                                                                                    |                                                                                     | 43.6                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 11.6                                                                              | 45.1                                                                              | 14.4                                                                              | 22.4                                                                              | 16.7                                                                              | 40.0                                                                              | 13.3                                                                               | 23.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.4                                                                               | 6.2                                                                               | 4.4                                                                               | 5.9                                                                               | 4.4                                                                               | * 6.2                                                                             | 4.4                                                                                | * 5.9                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 9.4                                                                               | 39.1                                                                              | 10.6                                                                              | 40.0                                                                              | 14.0                                                                              | * 35                                                                              | 14.3                                                                               | * 37                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 7.2                                                                               | 18.1                                                                              | 10.0                                                                              | 10.0                                                                              | 12.0                                                                              | 27.7                                                                              | 8.5                                                                                | 10.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 13.4                                                                              | 0.1                                                                               | 4.9                                                                               | 0.3                                                                               | 6.1                                                                               | 0.4                                                                                | 4.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          | 35.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 8: West Bernardo Dr & Duenda Rd

3/17/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |                                                                                     |  |  |                                                                                     |
| Traffic Volume (veh/h)       | 30                                                                                | 180                                                                               | 164                                                                               | 120                                                                               | 50                                                                                | 60                                                                                | 41                                                                                 | 140                                                                                 | 90                                                                                  | 120                                                                                 | 250                                                                                 | 20                                                                                  |
| Future Volume (veh/h)        | 30                                                                                | 180                                                                               | 164                                                                               | 120                                                                               | 50                                                                                | 60                                                                                | 41                                                                                 | 140                                                                                 | 90                                                                                  | 120                                                                                 | 250                                                                                 | 20                                                                                  |
| Number                       | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                  | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 33                                                                                | 196                                                                               | 178                                                                               | 130                                                                               | 54                                                                                | 65                                                                                | 45                                                                                 | 152                                                                                 | 98                                                                                  | 130                                                                                 | 272                                                                                 | 22                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                  | 2                                                                                   | 0                                                                                   | 1                                                                                   | 2                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 486                                                                               | 245                                                                               | 222                                                                               | 204                                                                               | 215                                                                               | 182                                                                               | 64                                                                                 | 317                                                                                 | 193                                                                                 | 169                                                                                 | 693                                                                                 | 56                                                                                  |
| Arrive On Green              | 0.27                                                                              | 0.27                                                                              | 0.27                                                                              | 0.12                                                                              | 0.12                                                                              | 0.12                                                                              | 0.04                                                                               | 0.15                                                                                | 0.15                                                                                | 0.10                                                                                | 0.21                                                                                | 0.21                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 894                                                                               | 812                                                                               | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                               | 2117                                                                                | 1288                                                                                | 1774                                                                                | 3319                                                                                | 267                                                                                 |
| Grp Volume(v), veh/h         | 33                                                                                | 0                                                                                 | 374                                                                               | 130                                                                               | 54                                                                                | 65                                                                                | 45                                                                                 | 126                                                                                 | 124                                                                                 | 130                                                                                 | 144                                                                                 | 150                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 0                                                                                 | 1705                                                                              | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                               | 1770                                                                                | 1635                                                                                | 1774                                                                                | 1770                                                                                | 1816                                                                                |
| Q Serve(g_s), s              | 0.8                                                                               | 0.0                                                                               | 11.1                                                                              | 3.8                                                                               | 1.4                                                                               | 2.1                                                                               | 1.4                                                                                | 3.5                                                                                 | 3.8                                                                                 | 3.9                                                                                 | 3.8                                                                                 | 3.9                                                                                 |
| Cycle Q Clear(g_c), s        | 0.8                                                                               | 0.0                                                                               | 11.1                                                                              | 3.8                                                                               | 1.4                                                                               | 2.1                                                                               | 1.4                                                                                | 3.5                                                                                 | 3.8                                                                                 | 3.9                                                                                 | 3.8                                                                                 | 3.9                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.48                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.79                                                                                | 1.00                                                                                |                                                                                     | 0.15                                                                                |
| Lane Grp Cap(c), veh/h       | 486                                                                               | 0                                                                                 | 467                                                                               | 204                                                                               | 215                                                                               | 182                                                                               | 64                                                                                 | 265                                                                                 | 245                                                                                 | 169                                                                                 | 369                                                                                 | 379                                                                                 |
| V/C Ratio(X)                 | 0.07                                                                              | 0.00                                                                              | 0.80                                                                              | 0.64                                                                              | 0.25                                                                              | 0.36                                                                              | 0.70                                                                               | 0.47                                                                                | 0.51                                                                                | 0.77                                                                                | 0.39                                                                                | 0.40                                                                                |
| Avail Cap(c_a), veh/h        | 747                                                                               | 0                                                                                 | 718                                                                               | 584                                                                               | 614                                                                               | 522                                                                               | 195                                                                                | 583                                                                                 | 539                                                                                 | 357                                                                                 | 745                                                                                 | 764                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 14.7                                                                              | 0.0                                                                               | 18.5                                                                              | 23.1                                                                              | 22.0                                                                              | 22.3                                                                              | 26.0                                                                               | 21.3                                                                                | 21.4                                                                                | 24.1                                                                                | 18.6                                                                                | 18.6                                                                                |
| Incr Delay (d2), s/veh       | 0.1                                                                               | 0.0                                                                               | 3.7                                                                               | 3.3                                                                               | 0.6                                                                               | 1.2                                                                               | 12.9                                                                               | 1.3                                                                                 | 1.6                                                                                 | 7.2                                                                                 | 0.7                                                                                 | 0.7                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.4                                                                               | 0.0                                                                               | 5.7                                                                               | 2.1                                                                               | 0.8                                                                               | 1.0                                                                               | 0.9                                                                                | 1.8                                                                                 | 1.8                                                                                 | 2.3                                                                                 | 2.0                                                                                 | 2.0                                                                                 |
| LnGrp Delay(d),s/veh         | 14.7                                                                              | 0.0                                                                               | 22.2                                                                              | 26.3                                                                              | 22.6                                                                              | 23.5                                                                              | 38.9                                                                               | 22.6                                                                                | 23.0                                                                                | 31.4                                                                                | 19.3                                                                                | 19.3                                                                                |
| LnGrp LOS                    | B                                                                                 |                                                                                   | C                                                                                 | C                                                                                 | C                                                                                 | C                                                                                 | D                                                                                  | C                                                                                   | C                                                                                   | C                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 407                                                                               |                                                                                   |                                                                                   | 249                                                                               |                                                                                   |                                                                                    | 295                                                                                 |                                                                                     |                                                                                     | 424                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 21.6                                                                              |                                                                                   |                                                                                   | 24.8                                                                              |                                                                                   |                                                                                    | 25.2                                                                                |                                                                                     |                                                                                     | 23.0                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 10.2                                                                              | 13.2                                                                              |                                                                                   | 20.0                                                                              | 7.0                                                                               | 16.4                                                                              |                                                                                    | 11.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |                                                                                    | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 11.0                                                                              | 18.0                                                                              |                                                                                   | 23.0                                                                              | 6.0                                                                               | 23.0                                                                              |                                                                                    | 18.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 5.9                                                                               | 5.8                                                                               |                                                                                   | 13.1                                                                              | 3.4                                                                               | 5.9                                                                               |                                                                                    | 5.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 2.4                                                                               |                                                                                   | 1.8                                                                               | 0.0                                                                               | 2.7                                                                               |                                                                                    | 0.6                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 23.4                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 9: West Bernardo Dr & Via Del Campo

3/17/2016

|                              |  |  |  |  |  |  |   |   |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|---|
| Movement                     | EBL                                                                               | EBT                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                               |   |   |
| Lane Configurations          |  |  |  |                                                                                   |  |  |   |   |
| Traffic Volume (veh/h)       | 466                                                                               | 620                                                                               | 360                                                                               | 200                                                                               | 130                                                                               | 114                                                                               |   |   |
| Future Volume (veh/h)        | 466                                                                               | 620                                                                               | 360                                                                               | 200                                                                               | 130                                                                               | 114                                                                               |   |   |
| Number                       | 5                                                                                 | 2                                                                                 | 6                                                                                 | 16                                                                                | 7                                                                                 | 14                                                                                |   |   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |   |   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              |   |   |
| Adj Flow Rate, veh/h         | 507                                                                               | 674                                                                               | 391                                                                               | 217                                                                               | 141                                                                               | 124                                                                               |   |   |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 |   |   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |   |   |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |   |
| Cap, veh/h                   | 877                                                                               | 2746                                                                              | 483                                                                               | 264                                                                               | 190                                                                               | 170                                                                               |   |   |
| Arrive On Green              | 0.49                                                                              | 0.78                                                                              | 0.22                                                                              | 0.22                                                                              | 0.11                                                                              | 0.11                                                                              |   |   |
| Sat Flow, veh/h              | 1774                                                                              | 3632                                                                              | 2300                                                                              | 1209                                                                              | 1774                                                                              | 1583                                                                              |   |   |
| Grp Volume(v), veh/h         | 507                                                                               | 674                                                                               | 312                                                                               | 296                                                                               | 141                                                                               | 124                                                                               |   |   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1770                                                                              | 1646                                                                              | 1774                                                                              | 1583                                                                              |   |   |
| Q Serve(g_s), s              | 17.7                                                                              | 4.6                                                                               | 14.6                                                                              | 14.9                                                                              | 6.7                                                                               | 6.6                                                                               |   |   |
| Cycle Q Clear(g_c), s        | 17.7                                                                              | 4.6                                                                               | 14.6                                                                              | 14.9                                                                              | 6.7                                                                               | 6.6                                                                               |   |   |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   | 0.73                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Lane Grp Cap(c), veh/h       | 877                                                                               | 2746                                                                              | 387                                                                               | 360                                                                               | 190                                                                               | 170                                                                               |   |   |
| V/C Ratio(X)                 | 0.58                                                                              | 0.25                                                                              | 0.81                                                                              | 0.82                                                                              | 0.74                                                                              | 0.73                                                                              |   |   |
| Avail Cap(c_a), veh/h        | 877                                                                               | 2746                                                                              | 501                                                                               | 466                                                                               | 449                                                                               | 401                                                                               |   |   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Uniform Delay (d), s/veh     | 15.6                                                                              | 2.7                                                                               | 32.3                                                                              | 32.4                                                                              | 37.8                                                                              | 37.7                                                                              |   |   |
| Incr Delay (d2), s/veh       | 1.0                                                                               | 0.2                                                                               | 7.3                                                                               | 8.8                                                                               | 5.6                                                                               | 5.9                                                                               |   |   |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |   |
| %ile BackOfQ(50%),veh/ln     | 8.8                                                                               | 2.2                                                                               | 7.9                                                                               | 7.6                                                                               | 3.6                                                                               | 6.0                                                                               |   |   |
| LnGrp Delay(d),s/veh         | 16.6                                                                              | 2.9                                                                               | 39.7                                                                              | 41.2                                                                              | 43.4                                                                              | 43.7                                                                              |   |   |
| LnGrp LOS                    | B                                                                                 | A                                                                                 | D                                                                                 | D                                                                                 | D                                                                                 | D                                                                                 |   |   |
| Approach Vol, veh/h          |                                                                                   | 1181                                                                              | 608                                                                               |                                                                                   | 265                                                                               |                                                                                   |   |   |
| Approach Delay, s/veh        |                                                                                   | 8.8                                                                               | 40.4                                                                              |                                                                                   | 43.5                                                                              |                                                                                   |   |   |
| Approach LOS                 |                                                                                   | A                                                                                 | D                                                                                 |                                                                                   | D                                                                                 |                                                                                   |   |   |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8 |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |   |   |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 73.2                                                                              |                                                                                   | 14.1                                                                              | 48.6                                                                              | 24.6                                                                              |   |   |
| Change Period (Y+Rc), s      |                                                                                   | 5.5                                                                               |                                                                                   | * 4.7                                                                             | 5.5                                                                               | * 5.5                                                                             |   |   |
| Max Green Setting (Gmax), s  |                                                                                   | 67.7                                                                              |                                                                                   | * 22                                                                              | 38.6                                                                              | * 25                                                                              |   |   |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 6.6                                                                               |                                                                                   | 8.7                                                                               | 19.7                                                                              | 16.9                                                                              |   |   |
| Green Ext Time (p_c), s      |                                                                                   | 7.1                                                                               |                                                                                   | 0.6                                                                               | 5.9                                                                               | 2.2                                                                               |   |   |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 22.6                                                                              |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |   |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |

# HCM 2010 Signalized Intersection Summary

## 10: Bernardo Center Dr & West Bernardo Dr

3/17/2016

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|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|
| Movement                     | EBL                                                                               | EBT                                                                               | WBU                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                                 |      |
| Lane Configurations          |  |  |  |  |  |  |  |      |
| Traffic Volume (veh/h)       | 708                                                                               | 580                                                                               | 0                                                                                 | 610                                                                               | 818                                                                               | 92                                                                                | 242                                                                                 |      |
| Future Volume (veh/h)        | 708                                                                               | 580                                                                               | 0                                                                                 | 610                                                                               | 818                                                                               | 92                                                                                | 242                                                                                 |      |
| Number                       | 1                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 12                                                                                | 3                                                                                 | 18                                                                                  |      |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   |      |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 0.97                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              |                                                                                   | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                                |      |
| Adj Flow Rate, veh/h         | 770                                                                               | 630                                                                               |                                                                                   | 663                                                                               | 889                                                                               | 100                                                                               | 263                                                                                 |      |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                   |      |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              |                                                                                   | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                                |      |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   |      |
| Cap, veh/h                   | 905                                                                               | 2482                                                                              |                                                                                   | 1332                                                                              | 1465                                                                              | 282                                                                               | 668                                                                                 |      |
| Arrive On Green              | 0.26                                                                              | 0.70                                                                              |                                                                                   | 0.38                                                                              | 0.38                                                                              | 0.16                                                                              | 0.16                                                                                |      |
| Sat Flow, veh/h              | 3442                                                                              | 3632                                                                              |                                                                                   | 3632                                                                              | 2714                                                                              | 1774                                                                              | 1583                                                                                |      |
| Grp Volume(v), veh/h         | 770                                                                               | 630                                                                               |                                                                                   | 663                                                                               | 889                                                                               | 100                                                                               | 263                                                                                 |      |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1770                                                                              |                                                                                   | 1770                                                                              | 1357                                                                              | 1774                                                                              | 1583                                                                                |      |
| Q Serve(g_s), s              | 15.0                                                                              | 4.6                                                                               |                                                                                   | 10.2                                                                              | 16.0                                                                              | 3.6                                                                               | 8.2                                                                                 |      |
| Cycle Q Clear(g_c), s        | 15.0                                                                              | 4.6                                                                               |                                                                                   | 10.2                                                                              | 16.0                                                                              | 3.6                                                                               | 8.2                                                                                 |      |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Lane Grp Cap(c), veh/h       | 905                                                                               | 2482                                                                              |                                                                                   | 1332                                                                              | 1465                                                                              | 282                                                                               | 668                                                                                 |      |
| V/C Ratio(X)                 | 0.85                                                                              | 0.25                                                                              |                                                                                   | 0.50                                                                              | 0.61                                                                              | 0.35                                                                              | 0.39                                                                                |      |
| Avail Cap(c_a), veh/h        | 1098                                                                              | 2482                                                                              |                                                                                   | 1504                                                                              | 1597                                                                              | 827                                                                               | 1154                                                                                |      |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Uniform Delay (d), s/veh     | 24.8                                                                              | 3.8                                                                               |                                                                                   | 17.0                                                                              | 11.4                                                                              | 26.5                                                                              | 14.2                                                                                |      |
| Incr Delay (d2), s/veh       | 5.6                                                                               | 0.1                                                                               |                                                                                   | 0.3                                                                               | 0.6                                                                               | 0.8                                                                               | 0.4                                                                                 |      |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 |      |
| %ile BackOfQ(50%),veh/ln     | 7.9                                                                               | 2.2                                                                               |                                                                                   | 5.0                                                                               | 6.0                                                                               | 1.8                                                                               | 3.6                                                                                 |      |
| LnGrp Delay(d),s/veh         | 30.4                                                                              | 3.9                                                                               |                                                                                   | 17.2                                                                              | 12.0                                                                              | 27.3                                                                              | 14.6                                                                                |      |
| LnGrp LOS                    | C                                                                                 | A                                                                                 |                                                                                   | B                                                                                 | B                                                                                 | C                                                                                 | B                                                                                   |      |
| Approach Vol, veh/h          |                                                                                   | 1400                                                                              |                                                                                   | 1552                                                                              |                                                                                   | 363                                                                               |                                                                                     |      |
| Approach Delay, s/veh        |                                                                                   | 18.5                                                                              |                                                                                   | 14.2                                                                              |                                                                                   | 18.1                                                                              |                                                                                     |      |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   | B                                                                                 |                                                                                   | B                                                                                 |                                                                                     |      |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8    |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                     | 8    |
| Phs Duration (G+Y+Rc), s     | 23.0                                                                              | 32.2                                                                              |                                                                                   |                                                                                   |                                                                                   | 55.2                                                                              |                                                                                     | 15.7 |
| Change Period (Y+Rc), s      | 4.4                                                                               | 5.5                                                                               |                                                                                   |                                                                                   |                                                                                   | * 5.5                                                                             |                                                                                     | 4.4  |
| Max Green Setting (Gmax), s  | 22.6                                                                              | 30.1                                                                              |                                                                                   |                                                                                   |                                                                                   | * 49                                                                              |                                                                                     | 33.0 |
| Max Q Clear Time (g_c+I1), s | 17.0                                                                              | 18.0                                                                              |                                                                                   |                                                                                   |                                                                                   | 6.6                                                                               |                                                                                     | 10.2 |
| Green Ext Time (p_c), s      | 1.6                                                                               | 8.6                                                                               |                                                                                   |                                                                                   |                                                                                   | 19.0                                                                              |                                                                                     | 1.1  |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 16.4                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |



# HCM 2010 Signalized Intersection Summary

## 1: Camino San Bernardo & Rancho Bernardo Rd

3/17/2016

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|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 10                                                                                | 972                                                                               | 230                                                                               | 411                                                                               | 847                                                                               | 10                                                                                | 120                                                                                | 10                                                                                  | 375                                                                                 | 70                                                                                  | 20                                                                                  | 30                                                                                  |
| Future Volume (veh/h)        | 10                                                                                | 972                                                                               | 230                                                                               | 411                                                                               | 847                                                                               | 10                                                                                | 120                                                                                | 10                                                                                  | 375                                                                                 | 70                                                                                  | 20                                                                                  | 30                                                                                  |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.99                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 10                                                                                | 1012                                                                              | 240                                                                               | 428                                                                               | 882                                                                               | 10                                                                                | 125                                                                                | 10                                                                                  | 391                                                                                 | 73                                                                                  | 21                                                                                  | 31                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                  | 2                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                              | 0.96                                                                               | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 22                                                                                | 1073                                                                              | 254                                                                               | 463                                                                               | 1796                                                                              | 20                                                                                | 440                                                                                | 574                                                                                 | 513                                                                                 | 135                                                                                 | 42                                                                                  | 37                                                                                  |
| Arrive On Green              | 0.01                                                                              | 0.38                                                                              | 0.38                                                                              | 0.13                                                                              | 0.50                                                                              | 0.50                                                                              | 0.32                                                                               | 0.32                                                                                | 0.32                                                                                | 0.32                                                                                | 0.32                                                                                | 0.32                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 2833                                                                              | 669                                                                               | 3442                                                                              | 3585                                                                              | 41                                                                                | 1347                                                                               | 1770                                                                                | 1582                                                                                | 218                                                                                 | 129                                                                                 | 114                                                                                 |
| Grp Volume(v), veh/h         | 10                                                                                | 631                                                                               | 621                                                                               | 428                                                                               | 435                                                                               | 457                                                                               | 125                                                                                | 10                                                                                  | 391                                                                                 | 125                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1733                                                                              | 1721                                                                              | 1770                                                                              | 1856                                                                              | 1347                                                                               | 1770                                                                                | 1582                                                                                | 461                                                                                 | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.5                                                                               | 30.7                                                                              | 31.0                                                                              | 11.0                                                                              | 14.5                                                                              | 14.5                                                                              | 0.0                                                                                | 0.3                                                                                 | 19.8                                                                                | 7.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.5                                                                               | 30.7                                                                              | 31.0                                                                              | 11.0                                                                              | 14.5                                                                              | 14.5                                                                              | 7.8                                                                                | 0.3                                                                                 | 19.8                                                                                | 26.9                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.39                                                                              | 1.00                                                                              |                                                                                   | 0.02                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 0.58                                                                                |                                                                                     | 0.25                                                                                |
| Lane Grp Cap(c), veh/h       | 22                                                                                | 670                                                                               | 656                                                                               | 463                                                                               | 886                                                                               | 930                                                                               | 440                                                                                | 574                                                                                 | 513                                                                                 | 213                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.46                                                                              | 0.94                                                                              | 0.95                                                                              | 0.92                                                                              | 0.49                                                                              | 0.49                                                                              | 0.28                                                                               | 0.02                                                                                | 0.76                                                                                | 0.59                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 99                                                                                | 684                                                                               | 670                                                                               | 463                                                                               | 886                                                                               | 930                                                                               | 441                                                                                | 575                                                                                 | 514                                                                                 | 215                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 43.8                                                                              | 26.8                                                                              | 26.8                                                                              | 38.1                                                                              | 14.7                                                                              | 14.7                                                                              | 23.0                                                                               | 20.5                                                                                | 27.1                                                                                | 34.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 14.2                                                                              | 21.0                                                                              | 22.3                                                                              | 24.4                                                                              | 0.4                                                                               | 0.4                                                                               | 0.4                                                                                | 0.0                                                                                 | 6.6                                                                                 | 4.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.3                                                                               | 18.8                                                                              | 18.7                                                                              | 6.8                                                                               | 7.1                                                                               | 7.5                                                                               | 2.4                                                                                | 0.2                                                                                 | 9.5                                                                                 | 3.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 58.0                                                                              | 47.8                                                                              | 49.2                                                                              | 62.5                                                                              | 15.2                                                                              | 15.1                                                                              | 23.4                                                                               | 20.5                                                                                | 33.7                                                                                | 38.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | E                                                                                 | D                                                                                 | D                                                                                 | E                                                                                 | B                                                                                 | B                                                                                 | C                                                                                  | C                                                                                   | C                                                                                   | D                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1262                                                                              |                                                                                   |                                                                                   | 1320                                                                              |                                                                                   |                                                                                    | 526                                                                                 |                                                                                     |                                                                                     | 125                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 48.5                                                                              |                                                                                   |                                                                                   | 30.5                                                                              |                                                                                   |                                                                                    | 31.0                                                                                |                                                                                     |                                                                                     | 38.0                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 16.0                                                                              | 39.3                                                                              |                                                                                   | 33.9                                                                              | 5.1                                                                               | 50.2                                                                              |                                                                                    | 33.9                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 5.5                                                                               |                                                                                   | 5.0                                                                               | 4.0                                                                               | 5.5                                                                               |                                                                                    | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 12.0                                                                              | 34.5                                                                              |                                                                                   | 29.0                                                                              | 5.0                                                                               | 41.5                                                                              |                                                                                    | 29.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 13.0                                                                              | 33.0                                                                              |                                                                                   | 28.9                                                                              | 2.5                                                                               | 16.5                                                                              |                                                                                    | 21.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.8                                                                               |                                                                                   | 0.1                                                                               | 0.0                                                                               | 14.8                                                                              |                                                                                    | 2.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 37.9                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 2: Via Del Campo & Rancho Bernardo Rd

3/17/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 20                                                                                | 1447                                                                              | 60                                                                                | 64                                                                                | 1098                                                                              | 10                                                                                | 350                                                                                | 10                                                                                  | 428                                                                                 | 10                                                                                  | 10                                                                                  | 10                                                                                  |
| Future Volume (veh/h)        | 20                                                                                | 1447                                                                              | 60                                                                                | 64                                                                                | 1098                                                                              | 10                                                                                | 350                                                                                | 10                                                                                  | 428                                                                                 | 10                                                                                  | 10                                                                                  | 10                                                                                  |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.98                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1900                                                                               | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 22                                                                                | 1573                                                                              | 65                                                                                | 70                                                                                | 1193                                                                              | 11                                                                                | 380                                                                                | 11                                                                                  | 465                                                                                 | 11                                                                                  | 11                                                                                  | 11                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 0                                                                                  | 1                                                                                   | 1                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 29                                                                                | 1729                                                                              | 71                                                                                | 64                                                                                | 1864                                                                              | 17                                                                                | 270                                                                                | 6                                                                                   | 562                                                                                 | 32                                                                                  | 32                                                                                  | 16                                                                                  |
| Arrive On Green              | 0.02                                                                              | 0.50                                                                              | 0.50                                                                              | 0.04                                                                              | 0.52                                                                              | 0.52                                                                              | 0.36                                                                               | 0.36                                                                                | 0.36                                                                                | 0.36                                                                                | 0.36                                                                                | 0.36                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 3464                                                                              | 143                                                                               | 1774                                                                              | 3593                                                                              | 33                                                                                | 616                                                                                | 18                                                                                  | 1559                                                                                | 0                                                                                   | 88                                                                                  | 44                                                                                  |
| Grp Volume(v), veh/h         | 22                                                                                | 801                                                                               | 837                                                                               | 70                                                                                | 587                                                                               | 617                                                                               | 391                                                                                | 0                                                                                   | 465                                                                                 | 33                                                                                  | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1838                                                                              | 1774                                                                              | 1770                                                                              | 1857                                                                              | 634                                                                                | 0                                                                                   | 1559                                                                                | 132                                                                                 | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 1.8                                                                               | 61.3                                                                              | 62.0                                                                              | 5.3                                                                               | 35.4                                                                              | 35.4                                                                              | 0.0                                                                                | 0.0                                                                                 | 40.2                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 1.8                                                                               | 61.3                                                                              | 62.0                                                                              | 5.3                                                                               | 35.4                                                                              | 35.4                                                                              | 53.3                                                                               | 0.0                                                                                 | 40.2                                                                                | 53.3                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.08                                                                              | 1.00                                                                              |                                                                                   | 0.02                                                                              | 0.97                                                                               |                                                                                     | 1.00                                                                                | 0.33                                                                                |                                                                                     | 0.33                                                                                |
| Lane Grp Cap(c), veh/h       | 29                                                                                | 883                                                                               | 917                                                                               | 64                                                                                | 918                                                                               | 963                                                                               | 277                                                                                | 0                                                                                   | 562                                                                                 | 80                                                                                  | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.77                                                                              | 0.91                                                                              | 0.91                                                                              | 1.10                                                                              | 0.64                                                                              | 0.64                                                                              | 1.41                                                                               | 0.00                                                                                | 0.83                                                                                | 0.41                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 74                                                                                | 912                                                                               | 947                                                                               | 64                                                                                | 918                                                                               | 963                                                                               | 277                                                                                | 0                                                                                   | 562                                                                                 | 80                                                                                  | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 72.5                                                                              | 33.9                                                                              | 34.1                                                                              | 71.3                                                                              | 25.6                                                                              | 25.6                                                                              | 51.9                                                                               | 0.0                                                                                 | 43.1                                                                                | 39.1                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 34.4                                                                              | 12.4                                                                              | 12.7                                                                              | 143.4                                                                             | 1.5                                                                               | 1.4                                                                               | 206.3                                                                              | 0.0                                                                                 | 9.9                                                                                 | 3.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 1.2                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 1.2                                                                               | 32.9                                                                              | 34.6                                                                              | 5.1                                                                               | 17.7                                                                              | 18.5                                                                              | 27.1                                                                               | 0.0                                                                                 | 18.8                                                                                | 1.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 106.9                                                                             | 46.3                                                                              | 46.8                                                                              | 216.0                                                                             | 27.1                                                                              | 27.1                                                                              | 258.2                                                                              | 0.0                                                                                 | 53.1                                                                                | 42.4                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | F                                                                                 | D                                                                                 | D                                                                                 | F                                                                                 | C                                                                                 | C                                                                                 | F                                                                                  |                                                                                     | D                                                                                   | D                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1660                                                                              |                                                                                   |                                                                                   | 1274                                                                              |                                                                                   |                                                                                    | 856                                                                                 |                                                                                     |                                                                                     | 33                                                                                  |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 47.4                                                                              |                                                                                   |                                                                                   | 37.5                                                                              |                                                                                   |                                                                                    | 146.8                                                                               |                                                                                     |                                                                                     | 42.4                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | F                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 9.7                                                                               | 79.7                                                                              |                                                                                   | 58.5                                                                              | 6.8                                                                               | 82.6                                                                              |                                                                                    | 58.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.4                                                                               | 5.9                                                                               |                                                                                   | * 5.2                                                                             | 4.4                                                                               | * 5.9                                                                             |                                                                                    | 5.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 5.3                                                                               | 76.2                                                                              |                                                                                   | * 53                                                                              | 6.2                                                                               | * 76                                                                              |                                                                                    | 53.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 7.3                                                                               | 64.0                                                                              |                                                                                   | 55.3                                                                              | 3.8                                                                               | 37.4                                                                              |                                                                                    | 55.3                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 9.8                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 27.2                                                                              |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 66.3                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 3: Project Dwy/Matinal Rd & Rancho Bernardo Rd

3/17/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 110                                                                               | 1600                                                                              | 25                                                                                | 78                                                                                | 990                                                                               | 60                                                                                | 102                                                                                | 9                                                                                   | 315                                                                                 | 50                                                                                  | 2                                                                                   | 120                                                                                 |
| Future Volume (veh/h)        | 110                                                                               | 1600                                                                              | 25                                                                                | 78                                                                                | 990                                                                               | 60                                                                                | 102                                                                                | 9                                                                                   | 315                                                                                 | 50                                                                                  | 2                                                                                   | 120                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.99                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 120                                                                               | 1739                                                                              | 27                                                                                | 85                                                                                | 1076                                                                              | 65                                                                                | 111                                                                                | 10                                                                                  | 342                                                                                 | 54                                                                                  | 2                                                                                   | 130                                                                                 |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                  | 1                                                                                   | 0                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 150                                                                               | 1808                                                                              | 28                                                                                | 90                                                                                | 1604                                                                              | 97                                                                                | 242                                                                                | 13                                                                                  | 440                                                                                 | 79                                                                                  | 25                                                                                  | 134                                                                                 |
| Arrive On Green              | 0.08                                                                              | 0.51                                                                              | 0.51                                                                              | 0.05                                                                              | 0.47                                                                              | 0.47                                                                              | 0.28                                                                               | 0.28                                                                                | 0.28                                                                                | 0.28                                                                                | 0.28                                                                                | 0.28                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 3567                                                                              | 55                                                                                | 1774                                                                              | 3391                                                                              | 205                                                                               | 1253                                                                               | 45                                                                                  | 1545                                                                                | 113                                                                                 | 89                                                                                  | 469                                                                                 |
| Grp Volume(v), veh/h         | 120                                                                               | 861                                                                               | 905                                                                               | 85                                                                                | 561                                                                               | 580                                                                               | 111                                                                                | 0                                                                                   | 352                                                                                 | 186                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1853                                                                              | 1774                                                                              | 1770                                                                              | 1827                                                                              | 1253                                                                               | 0                                                                                   | 1590                                                                                | 672                                                                                 | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 6.6                                                                               | 46.3                                                                              | 46.6                                                                              | 4.7                                                                               | 24.2                                                                              | 24.2                                                                              | 0.0                                                                                | 0.0                                                                                 | 20.1                                                                                | 7.6                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 6.6                                                                               | 46.3                                                                              | 46.6                                                                              | 4.7                                                                               | 24.2                                                                              | 24.2                                                                              | 16.7                                                                               | 0.0                                                                                 | 20.1                                                                                | 27.7                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.03                                                                              | 1.00                                                                              |                                                                                   | 0.11                                                                              | 1.00                                                                               |                                                                                     | 0.97                                                                                | 0.29                                                                                |                                                                                     | 0.70                                                                                |
| Lane Grp Cap(c), veh/h       | 150                                                                               | 897                                                                               | 939                                                                               | 90                                                                                | 837                                                                               | 864                                                                               | 242                                                                                | 0                                                                                   | 453                                                                                 | 238                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.80                                                                              | 0.96                                                                              | 0.96                                                                              | 0.95                                                                              | 0.67                                                                              | 0.67                                                                              | 0.46                                                                               | 0.00                                                                                | 0.78                                                                                | 0.78                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 233                                                                               | 916                                                                               | 959                                                                               | 90                                                                                | 837                                                                               | 864                                                                               | 249                                                                                | 0                                                                                   | 463                                                                                 | 238                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 44.5                                                                              | 23.4                                                                              | 23.5                                                                              | 46.9                                                                              | 20.1                                                                              | 20.1                                                                              | 31.3                                                                               | 0.0                                                                                 | 32.5                                                                                | 35.9                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 10.4                                                                              | 20.5                                                                              | 20.5                                                                              | 77.9                                                                              | 2.1                                                                               | 2.0                                                                               | 1.4                                                                                | 0.0                                                                                 | 8.0                                                                                 | 15.3                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 3.7                                                                               | 27.6                                                                              | 29.0                                                                              | 4.3                                                                               | 12.2                                                                              | 12.7                                                                              | 2.8                                                                                | 0.0                                                                                 | 9.8                                                                                 | 6.1                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 54.9                                                                              | 43.9                                                                              | 44.0                                                                              | 124.7                                                                             | 22.2                                                                              | 22.2                                                                              | 32.6                                                                               | 0.0                                                                                 | 40.5                                                                                | 51.2                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | D                                                                                 | D                                                                                 | D                                                                                 | F                                                                                 | C                                                                                 | C                                                                                 | C                                                                                  |                                                                                     | D                                                                                   | D                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1886                                                                              |                                                                                   |                                                                                   | 1226                                                                              |                                                                                   |                                                                                    | 463                                                                                 |                                                                                     |                                                                                     | 186                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 44.7                                                                              |                                                                                   |                                                                                   | 29.3                                                                              |                                                                                   |                                                                                    | 38.6                                                                                |                                                                                     |                                                                                     | 51.2                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 9.0                                                                               | 57.2                                                                              |                                                                                   | 32.8                                                                              | 12.3                                                                              | 53.8                                                                              |                                                                                    | 32.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 7.0                                                                               |                                                                                   | 4.6                                                                               | 4.0                                                                               | * 7                                                                               |                                                                                    | * 4.6                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 5.0                                                                               | 51.2                                                                              |                                                                                   | 28.2                                                                              | 13.0                                                                              | * 44                                                                              |                                                                                    | * 29                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 6.7                                                                               | 48.6                                                                              |                                                                                   | 29.7                                                                              | 8.6                                                                               | 26.2                                                                              |                                                                                    | 22.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 1.6                                                                               |                                                                                   | 0.0                                                                               | 0.1                                                                               | 15.3                                                                              |                                                                                    | 2.3                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 39.2                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 4: West Bernardo Dr & Rancho Bernardo Rd

3/17/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)       | 173                                                                               | 1861                                                                              | 71                                                                                | 200                                                                               | 1059                                                                              | 510                                                                               | 185                                                                                | 360                                                                                 | 700                                                                                 | 350                                                                                 | 90                                                                                  | 73                                                                                  |
| Future Volume (veh/h)        | 173                                                                               | 1861                                                                              | 71                                                                                | 200                                                                               | 1059                                                                              | 510                                                                               | 185                                                                                | 360                                                                                 | 700                                                                                 | 350                                                                                 | 90                                                                                  | 73                                                                                  |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                               | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 177                                                                               | 1899                                                                              | 72                                                                                | 204                                                                               | 1081                                                                              | 520                                                                               | 189                                                                                | 367                                                                                 | 714                                                                                 | 357                                                                                 | 92                                                                                  | 74                                                                                  |
| Adj No. of Lanes             | 2                                                                                 | 3                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 | 1                                                                                 | 2                                                                                  | 2                                                                                   | 1                                                                                   | 2                                                                                   | 2                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                              | 0.98                                                                               | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                | 0.98                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 188                                                                               | 1731                                                                              | 66                                                                                | 280                                                                               | 1318                                                                              | 588                                                                               | 259                                                                                | 1004                                                                                | 576                                                                                 | 436                                                                                 | 652                                                                                 | 480                                                                                 |
| Arrive On Green              | 0.05                                                                              | 0.34                                                                              | 0.34                                                                              | 0.08                                                                              | 0.37                                                                              | 0.37                                                                              | 0.08                                                                               | 0.28                                                                                | 0.28                                                                                | 0.13                                                                                | 0.34                                                                                | 0.34                                                                                |
| Sat Flow, veh/h              | 3442                                                                              | 5029                                                                              | 190                                                                               | 3442                                                                              | 3539                                                                              | 1580                                                                              | 3442                                                                               | 3539                                                                                | 1578                                                                                | 3442                                                                                | 1947                                                                                | 1433                                                                                |
| Grp Volume(v), veh/h         | 177                                                                               | 1279                                                                              | 692                                                                               | 204                                                                               | 1081                                                                              | 520                                                                               | 189                                                                                | 367                                                                                 | 714                                                                                 | 357                                                                                 | 83                                                                                  | 83                                                                                  |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1695                                                                              | 1829                                                                              | 1721                                                                              | 1770                                                                              | 1580                                                                              | 1721                                                                               | 1770                                                                                | 1578                                                                                | 1721                                                                                | 1770                                                                                | 1610                                                                                |
| Q Serve(g_s), s              | 6.3                                                                               | 42.1                                                                              | 42.1                                                                              | 7.1                                                                               | 33.8                                                                              | 25.1                                                                              | 6.6                                                                                | 10.1                                                                                | 29.1                                                                                | 12.4                                                                                | 4.0                                                                                 | 4.4                                                                                 |
| Cycle Q Clear(g_c), s        | 6.3                                                                               | 42.1                                                                              | 42.1                                                                              | 7.1                                                                               | 33.8                                                                              | 25.1                                                                              | 6.6                                                                                | 10.1                                                                                | 29.1                                                                                | 12.4                                                                                | 4.0                                                                                 | 4.4                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.10                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.89                                                                                |
| Lane Grp Cap(c), veh/h       | 188                                                                               | 1167                                                                              | 629                                                                               | 280                                                                               | 1318                                                                              | 588                                                                               | 259                                                                                | 1004                                                                                | 576                                                                                 | 436                                                                                 | 593                                                                                 | 540                                                                                 |
| V/C Ratio(X)                 | 0.94                                                                              | 1.10                                                                              | 1.10                                                                              | 0.73                                                                              | 0.82                                                                              | 0.88                                                                              | 0.73                                                                               | 0.37                                                                                | 1.24                                                                                | 0.82                                                                                | 0.14                                                                                | 0.15                                                                                |
| Avail Cap(c_a), veh/h        | 188                                                                               | 1167                                                                              | 629                                                                               | 523                                                                               | 1571                                                                              | 701                                                                               | 959                                                                                | 1131                                                                                | 633                                                                                 | 847                                                                                 | 593                                                                                 | 540                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 57.6                                                                              | 40.1                                                                              | 40.1                                                                              | 54.9                                                                              | 34.7                                                                              | 16.0                                                                              | 55.4                                                                               | 35.0                                                                                | 25.2                                                                                | 52.1                                                                                | 28.4                                                                                | 28.5                                                                                |
| Incr Delay (d2), s/veh       | 48.4                                                                              | 56.8                                                                              | 66.0                                                                              | 3.6                                                                               | 3.1                                                                               | 11.4                                                                              | 4.0                                                                                | 0.2                                                                                 | 121.7                                                                               | 3.9                                                                                 | 0.1                                                                                 | 0.1                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 4.2                                                                               | 28.8                                                                              | 32.7                                                                              | 3.5                                                                               | 17.1                                                                              | 12.7                                                                              | 3.3                                                                                | 5.0                                                                                 | 33.3                                                                                | 6.1                                                                                 | 2.0                                                                                 | 2.0                                                                                 |
| LnGrp Delay(d),s/veh         | 106.0                                                                             | 96.9                                                                              | 106.1                                                                             | 58.5                                                                              | 37.8                                                                              | 27.4                                                                              | 59.3                                                                               | 35.2                                                                                | 147.0                                                                               | 55.9                                                                                | 28.5                                                                                | 28.6                                                                                |
| LnGrp LOS                    | F                                                                                 | F                                                                                 | F                                                                                 | E                                                                                 | D                                                                                 | C                                                                                 | E                                                                                  | D                                                                                   | F                                                                                   | E                                                                                   | C                                                                                   | C                                                                                   |
| Approach Vol, veh/h          | 2148                                                                              |                                                                                   |                                                                                   | 1805                                                                              |                                                                                   |                                                                                   | 1270                                                                               |                                                                                     |                                                                                     | 523                                                                                 |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 100.6                                                                             |                                                                                   |                                                                                   | 37.1                                                                              |                                                                                   |                                                                                   | 101.6                                                                              |                                                                                     |                                                                                     | 47.2                                                                                |                                                                                     |                                                                                     |
| Approach LOS                 | F                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | F                                                                                  |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 14.3                                                                              | 48.0                                                                              | 13.6                                                                              | 46.4                                                                              | 11.1                                                                              | 51.2                                                                              | 19.9                                                                               | 40.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.4                                                                               | 5.9                                                                               | 4.4                                                                               | 5.4                                                                               | 4.4                                                                               | 5.7                                                                               | 4.4                                                                                | 5.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 18.6                                                                              | 42.1                                                                              | 34.1                                                                              | 35.1                                                                              | 6.6                                                                               | 54.3                                                                              | 30.1                                                                               | 39.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 9.1                                                                               | 44.1                                                                              | 8.6                                                                               | 6.4                                                                               | 8.3                                                                               | 35.8                                                                              | 14.4                                                                               | 31.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.9                                                                               | 0.0                                                                               | 0.6                                                                               | 7.4                                                                               | 0.0                                                                               | 9.8                                                                               | 1.1                                                                                | 3.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          | 76.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 | E                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 5: I-15 SB Ramps & Rancho Bernardo Rd

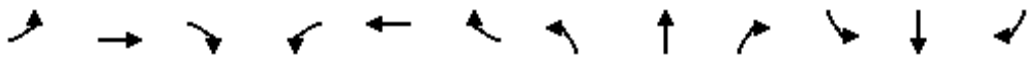
3/17/2016

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|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |                                                                                   |  |  |                                                                                   |  |  |                                                                                    |                                                                                     |                                                                                     |  |                                                                                     |  |
| Traffic Volume (veh/h)       | 0                                                                                 | 1829                                                                              | 1072                                                                              | 0                                                                                 | 1263                                                                              | 600                                                                               | 0                                                                                  | 0                                                                                   | 0                                                                                   | 460                                                                                 | 0                                                                                   | 486                                                                                 |
| Future Volume (veh/h)        | 0                                                                                 | 1829                                                                              | 1072                                                                              | 0                                                                                 | 1263                                                                              | 600                                                                               | 0                                                                                  | 0                                                                                   | 0                                                                                   | 460                                                                                 | 0                                                                                   | 486                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                |                                                                                    |                                                                                     |                                                                                     | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 0                                                                                 | 1863                                                                              | 1863                                                                              | 0                                                                                 | 1863                                                                              | 1863                                                                              |                                                                                    |                                                                                     |                                                                                     | 1863                                                                                | 0                                                                                   | 1863                                                                                |
| Adj Flow Rate, veh/h         | 0                                                                                 | 2447                                                                              | 756                                                                               | 0                                                                                 | 1316                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 479                                                                                 | 0                                                                                   | 506                                                                                 |
| Adj No. of Lanes             | 0                                                                                 | 3                                                                                 | 1                                                                                 | 0                                                                                 | 3                                                                                 | 1                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 2                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.96                                                                              | 0.96                                                                              | 0.92                                                                              | 0.96                                                                              | 0.96                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.96                                                                                | 0.92                                                                                | 0.96                                                                                |
| Percent Heavy Veh, %         | 0                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                 | 2                                                                                 |                                                                                    |                                                                                     |                                                                                     | 2                                                                                   | 0                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 0                                                                                 | 3729                                                                              | 1056                                                                              | 0                                                                                 | 3729                                                                              | 1056                                                                              |                                                                                    |                                                                                     |                                                                                     | 715                                                                                 | 0                                                                                   | 579                                                                                 |
| Arrive On Green              | 0.00                                                                              | 0.67                                                                              | 0.67                                                                              | 0.00                                                                              | 1.00                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.21                                                                                | 0.00                                                                                | 0.21                                                                                |
| Sat Flow, veh/h              | 0                                                                                 | 5588                                                                              | 1583                                                                              | 0                                                                                 | 5588                                                                              | 1583                                                                              |                                                                                    |                                                                                     |                                                                                     | 3442                                                                                | 0                                                                                   | 2787                                                                                |
| Grp Volume(v), veh/h         | 0                                                                                 | 2447                                                                              | 756                                                                               | 0                                                                                 | 1316                                                                              | 0                                                                                 |                                                                                    |                                                                                     |                                                                                     | 479                                                                                 | 0                                                                                   | 506                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                 | 1863                                                                              | 1583                                                                              | 0                                                                                 | 1863                                                                              | 1583                                                                              |                                                                                    |                                                                                     |                                                                                     | 1721                                                                                | 0                                                                                   | 1393                                                                                |
| Q Serve(g_s), s              | 0.0                                                                               | 25.9                                                                              | 30.4                                                                              | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 12.8                                                                                | 0.0                                                                                 | 17.6                                                                                |
| Cycle Q Clear(g_c), s        | 0.0                                                                               | 25.9                                                                              | 30.4                                                                              | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 12.8                                                                                | 0.0                                                                                 | 17.6                                                                                |
| Prop In Lane                 | 0.00                                                                              |                                                                                   | 1.00                                                                              | 0.00                                                                              |                                                                                   | 1.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 0                                                                                 | 3729                                                                              | 1056                                                                              | 0                                                                                 | 3729                                                                              | 1056                                                                              |                                                                                    |                                                                                     |                                                                                     | 715                                                                                 | 0                                                                                   | 579                                                                                 |
| V/C Ratio(X)                 | 0.00                                                                              | 0.66                                                                              | 0.72                                                                              | 0.00                                                                              | 0.35                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 0.67                                                                                | 0.00                                                                                | 0.87                                                                                |
| Avail Cap(c_a), veh/h        | 0                                                                                 | 3729                                                                              | 1056                                                                              | 0                                                                                 | 3729                                                                              | 1056                                                                              |                                                                                    |                                                                                     |                                                                                     | 767                                                                                 | 0                                                                                   | 621                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 2.00                                                                              | 2.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 0.00                                                                              | 0.09                                                                              | 0.09                                                                              | 0.00                                                                              | 0.81                                                                              | 0.00                                                                              |                                                                                    |                                                                                     |                                                                                     | 1.00                                                                                | 0.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 0.0                                                                               | 9.9                                                                               | 10.6                                                                              | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 36.5                                                                                | 0.0                                                                                 | 38.3                                                                                |
| Incr Delay (d2), s/veh       | 0.0                                                                               | 0.1                                                                               | 0.4                                                                               | 0.0                                                                               | 0.2                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 2.1                                                                                 | 0.0                                                                                 | 12.5                                                                                |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                               | 13.2                                                                              | 13.1                                                                              | 0.0                                                                               | 0.1                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 6.3                                                                                 | 0.0                                                                                 | 7.8                                                                                 |
| LnGrp Delay(d),s/veh         | 0.0                                                                               | 9.9                                                                               | 11.0                                                                              | 0.0                                                                               | 0.2                                                                               | 0.0                                                                               |                                                                                    |                                                                                     |                                                                                     | 38.5                                                                                | 0.0                                                                                 | 50.9                                                                                |
| LnGrp LOS                    |                                                                                   | A                                                                                 | B                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     | D                                                                                   |                                                                                     | D                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 3203                                                                              |                                                                                   |                                                                                   | 1316                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 985                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 10.2                                                                              |                                                                                   |                                                                                   | 0.2                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 44.9                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 |                                                                                   | 6                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 73.1                                                                              |                                                                                   | 26.9                                                                              |                                                                                   | 73.1                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      |                                                                                   | 6.4                                                                               |                                                                                   | 6.1                                                                               |                                                                                   | 6.4                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  |                                                                                   | 65.2                                                                              |                                                                                   | 22.3                                                                              |                                                                                   | 65.2                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 32.4                                                                              |                                                                                   | 19.6                                                                              |                                                                                   | 2.0                                                                               |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      |                                                                                   | 31.7                                                                              |                                                                                   | 1.2                                                                               |                                                                                   | 59.5                                                                              |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 14.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 6: I-15 NB Ramps & Rancho Bernardo Rd

3/17/2016

|                              |  |      |      |      |      |      |      |      |      |     |     |     |
|------------------------------|------------------------------------------------------------------------------------|------|------|------|------|------|------|------|------|-----|-----|-----|
| Movement                     | EBL                                                                                | EBT  | EBR  | WBL  | WBT  | WBR  | NBL  | NBT  | NBR  | SBL | SBT | SBR |
| Lane Configurations          |                                                                                    | ↑↑↑  | ↑    |      | ↑↑↑  | ↑    | ↑↑   |      | ↑↑   |     |     |     |
| Traffic Volume (veh/h)       | 0                                                                                  | 1033 | 1256 | 0    | 1121 | 510  | 743  | 0    | 490  | 0   | 0   | 0   |
| Future Volume (veh/h)        | 0                                                                                  | 1033 | 1256 | 0    | 1121 | 510  | 743  | 0    | 490  | 0   | 0   | 0   |
| Number                       | 5                                                                                  | 2    | 12   | 1    | 6    | 16   | 3    | 8    | 18   |     |     |     |
| Initial Q (Qb), veh          | 0                                                                                  | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |     |     |     |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                               |      | 1.00 | 1.00 |      | 1.00 | 1.00 |      | 1.00 |     |     |     |
| Parking Bus, Adj             | 1.00                                                                               | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |     |     |     |
| Adj Sat Flow, veh/h/ln       | 0                                                                                  | 1863 | 1863 | 0    | 1863 | 1863 | 1863 | 0    | 1863 |     |     |     |
| Adj Flow Rate, veh/h         | 0                                                                                  | 1099 | 0    | 0    | 1193 | 543  | 790  | 0    | 521  |     |     |     |
| Adj No. of Lanes             | 0                                                                                  | 3    | 1    | 0    | 3    | 1    | 2    | 0    | 2    |     |     |     |
| Peak Hour Factor             | 0.92                                                                               | 0.94 | 0.94 | 0.92 | 0.94 | 0.94 | 0.94 | 0.92 | 0.94 |     |     |     |
| Percent Heavy Veh, %         | 0                                                                                  | 2    | 2    | 0    | 2    | 2    | 2    | 0    | 2    |     |     |     |
| Cap, veh/h                   | 0                                                                                  | 3343 | 947  | 0    | 3042 | 947  | 953  | 0    | 771  |     |     |     |
| Arrive On Green              | 0.00                                                                               | 1.00 | 0.00 | 0.00 | 0.60 | 0.60 | 0.28 | 0.00 | 0.28 |     |     |     |
| Sat Flow, veh/h              | 0                                                                                  | 5588 | 1583 | 0    | 5253 | 1583 | 3442 | 0    | 2787 |     |     |     |
| Grp Volume(v), veh/h         | 0                                                                                  | 1099 | 0    | 0    | 1193 | 543  | 790  | 0    | 521  |     |     |     |
| Grp Sat Flow(s),veh/h/ln     | 0                                                                                  | 1863 | 1583 | 0    | 1695 | 1583 | 1721 | 0    | 1393 |     |     |     |
| Q Serve(g_s), s              | 0.0                                                                                | 0.0  | 0.0  | 0.0  | 12.3 | 21.0 | 21.5 | 0.0  | 16.6 |     |     |     |
| Cycle Q Clear(g_c), s        | 0.0                                                                                | 0.0  | 0.0  | 0.0  | 12.3 | 21.0 | 21.5 | 0.0  | 16.6 |     |     |     |
| Prop In Lane                 | 0.00                                                                               |      | 1.00 | 0.00 |      | 1.00 | 1.00 |      | 1.00 |     |     |     |
| Lane Grp Cap(c), veh/h       | 0                                                                                  | 3343 | 947  | 0    | 3042 | 947  | 953  | 0    | 771  |     |     |     |
| V/C Ratio(X)                 | 0.00                                                                               | 0.33 | 0.00 | 0.00 | 0.39 | 0.57 | 0.83 | 0.00 | 0.68 |     |     |     |
| Avail Cap(c_a), veh/h        | 0                                                                                  | 3343 | 947  | 0    | 3042 | 947  | 1167 | 0    | 945  |     |     |     |
| HCM Platoon Ratio            | 1.00                                                                               | 1.67 | 1.67 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |     |     |     |
| Upstream Filter(I)           | 0.00                                                                               | 0.60 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |     |     |     |
| Uniform Delay (d), s/veh     | 0.0                                                                                | 0.0  | 0.0  | 0.0  | 10.5 | 12.3 | 33.9 | 0.0  | 32.2 |     |     |     |
| Incr Delay (d2), s/veh       | 0.0                                                                                | 0.2  | 0.0  | 0.0  | 0.4  | 2.5  | 4.3  | 0.0  | 1.4  |     |     |     |
| Initial Q Delay(d3),s/veh    | 0.0                                                                                | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |     |     |     |
| %ile BackOfQ(50%),veh/ln     | 0.0                                                                                | 0.1  | 0.0  | 0.0  | 5.9  | 9.7  | 10.8 | 0.0  | 6.5  |     |     |     |
| LnGrp Delay(d),s/veh         | 0.0                                                                                | 0.2  | 0.0  | 0.0  | 10.9 | 14.8 | 38.2 | 0.0  | 33.6 |     |     |     |
| LnGrp LOS                    |                                                                                    | A    |      |      | B    | B    | D    |      | C    |     |     |     |
| Approach Vol, veh/h          |                                                                                    | 1099 |      |      | 1736 |      |      | 1311 |      |     |     |     |
| Approach Delay, s/veh        |                                                                                    | 0.2  |      |      | 12.1 |      |      | 36.4 |      |     |     |     |
| Approach LOS                 |                                                                                    | A    |      |      | B    |      |      | D    |      |     |     |     |
| Timer                        | 1                                                                                  | 2    | 3    | 4    | 5    | 6    | 7    | 8    |      |     |     |     |
| Assigned Phs                 |                                                                                    | 2    |      |      |      | 6    |      | 8    |      |     |     |     |
| Phs Duration (G+Y+Rc), s     |                                                                                    | 66.2 |      |      |      | 66.2 |      | 33.8 |      |     |     |     |
| Change Period (Y+Rc), s      |                                                                                    | 6.4  |      |      |      | 6.4  |      | 6.1  |      |     |     |     |
| Max Green Setting (Gmax), s  |                                                                                    | 53.6 |      |      |      | 53.6 |      | 33.9 |      |     |     |     |
| Max Q Clear Time (g_c+I1), s |                                                                                    | 2.0  |      |      |      | 23.0 |      | 23.5 |      |     |     |     |
| Green Ext Time (p_c), s      |                                                                                    | 32.8 |      |      |      | 22.9 |      | 4.1  |      |     |     |     |
| <b>Intersection Summary</b>  |                                                                                    |      |      |      |      |      |      |      |      |     |     |     |
| HCM 2010 Ctrl Delay          |                                                                                    |      |      | 16.6 |      |      |      |      |      |     |     |     |
| HCM 2010 LOS                 |                                                                                    |      |      | B    |      |      |      |      |      |     |     |     |
| <b>Notes</b>                 |                                                                                    |      |      |      |      |      |      |      |      |     |     |     |

# HCM 2010 Signalized Intersection Summary

## 7: Bernardo Center Dr & Rancho Bernardo Rd

3/17/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |  |  |  |                                                                                   |  |  |                                                                                     |  |  |  |
| Traffic Volume (veh/h)       | 289                                                                               | 756                                                                               | 379                                                                               | 150                                                                               | 766                                                                               | 170                                                                               | 462                                                                                | 520                                                                                 | 280                                                                                 | 200                                                                                 | 310                                                                                 | 122                                                                                 |
| Future Volume (veh/h)        | 289                                                                               | 756                                                                               | 379                                                                               | 150                                                                               | 766                                                                               | 170                                                                               | 462                                                                                | 520                                                                                 | 280                                                                                 | 200                                                                                 | 310                                                                                 | 122                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                              |                                                                                   | 0.99                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.98                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1863                                                                                |
| Adj Flow Rate, veh/h         | 304                                                                               | 797                                                                               | 398                                                                               | 158                                                                               | 806                                                                               | 179                                                                               | 486                                                                                | 547                                                                                 | 295                                                                                 | 211                                                                                 | 326                                                                                 | 128                                                                                 |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 | 1                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 2                                                                                  | 2                                                                                   | 0                                                                                   | 2                                                                                   | 2                                                                                   | 1                                                                                   |
| Peak Hour Factor             | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              | 0.95                                                                               | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                | 0.95                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 362                                                                               | 1317                                                                              | 553                                                                               | 218                                                                               | 903                                                                               | 201                                                                               | 544                                                                                | 693                                                                                 | 373                                                                                 | 277                                                                                 | 831                                                                                 | 525                                                                                 |
| Arrive On Green              | 0.10                                                                              | 0.35                                                                              | 0.35                                                                              | 0.06                                                                              | 0.31                                                                              | 0.31                                                                              | 0.16                                                                               | 0.31                                                                                | 0.31                                                                                | 0.08                                                                                | 0.23                                                                                | 0.23                                                                                |
| Sat Flow, veh/h              | 3548                                                                              | 3725                                                                              | 1563                                                                              | 3442                                                                              | 2872                                                                              | 638                                                                               | 3442                                                                               | 2221                                                                                | 1196                                                                                | 3442                                                                                | 3539                                                                                | 1550                                                                                |
| Grp Volume(v), veh/h         | 304                                                                               | 797                                                                               | 398                                                                               | 158                                                                               | 497                                                                               | 488                                                                               | 486                                                                                | 436                                                                                 | 406                                                                                 | 211                                                                                 | 326                                                                                 | 128                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1863                                                                              | 1563                                                                              | 1721                                                                              | 1770                                                                              | 1740                                                                              | 1721                                                                               | 1770                                                                                | 1648                                                                                | 1721                                                                                | 1770                                                                                | 1550                                                                                |
| Q Serve(g_s), s              | 9.2                                                                               | 19.3                                                                              | 24.2                                                                              | 4.9                                                                               | 29.3                                                                              | 29.3                                                                              | 15.2                                                                               | 24.6                                                                                | 24.7                                                                                | 6.6                                                                                 | 8.5                                                                                 | 6.5                                                                                 |
| Cycle Q Clear(g_c), s        | 9.2                                                                               | 19.3                                                                              | 24.2                                                                              | 4.9                                                                               | 29.3                                                                              | 29.3                                                                              | 15.2                                                                               | 24.6                                                                                | 24.7                                                                                | 6.6                                                                                 | 8.5                                                                                 | 6.5                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 0.37                                                                              | 1.00                                                                               |                                                                                     | 0.73                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Lane Grp Cap(c), veh/h       | 362                                                                               | 1317                                                                              | 553                                                                               | 218                                                                               | 557                                                                               | 547                                                                               | 544                                                                                | 552                                                                                 | 514                                                                                 | 277                                                                                 | 831                                                                                 | 525                                                                                 |
| V/C Ratio(X)                 | 0.84                                                                              | 0.61                                                                              | 0.72                                                                              | 0.73                                                                              | 0.89                                                                              | 0.89                                                                              | 0.89                                                                               | 0.79                                                                                | 0.79                                                                                | 0.76                                                                                | 0.39                                                                                | 0.24                                                                                |
| Avail Cap(c_a), veh/h        | 362                                                                               | 1317                                                                              | 553                                                                               | 257                                                                               | 581                                                                               | 571                                                                               | 559                                                                                | 731                                                                                 | 681                                                                                 | 411                                                                                 | 1291                                                                                | 727                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 48.3                                                                              | 29.2                                                                              | 30.7                                                                              | 50.4                                                                              | 35.8                                                                              | 35.8                                                                              | 45.3                                                                               | 34.4                                                                                | 34.4                                                                                | 49.4                                                                                | 35.4                                                                                | 26.3                                                                                |
| Incr Delay (d2), s/veh       | 15.8                                                                              | 0.8                                                                               | 4.5                                                                               | 8.1                                                                               | 15.6                                                                              | 15.8                                                                              | 16.5                                                                               | 4.3                                                                                 | 4.6                                                                                 | 4.7                                                                                 | 0.3                                                                                 | 0.2                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 5.3                                                                               | 10.0                                                                              | 11.1                                                                              | 2.6                                                                               | 16.8                                                                              | 16.5                                                                              | 8.5                                                                                | 12.6                                                                                | 11.8                                                                                | 3.3                                                                                 | 4.2                                                                                 | 2.8                                                                                 |
| LnGrp Delay(d),s/veh         | 64.2                                                                              | 30.0                                                                              | 35.3                                                                              | 58.5                                                                              | 51.4                                                                              | 51.6                                                                              | 61.8                                                                               | 38.7                                                                                | 39.1                                                                                | 54.1                                                                                | 35.7                                                                                | 26.5                                                                                |
| LnGrp LOS                    | E                                                                                 | C                                                                                 | D                                                                                 | E                                                                                 | D                                                                                 | D                                                                                 | E                                                                                  | D                                                                                   | D                                                                                   | D                                                                                   | D                                                                                   | C                                                                                   |
| Approach Vol, veh/h          | 1499                                                                              |                                                                                   |                                                                                   |                                                                                   | 1143                                                                              |                                                                                   |                                                                                    |                                                                                     | 1328                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay, s/veh        | 38.3                                                                              |                                                                                   |                                                                                   |                                                                                   | 52.5                                                                              |                                                                                   |                                                                                    |                                                                                     | 47.3                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                 | D                                                                                 |                                                                                   |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    |                                                                                     | D                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 11.3                                                                              | 45.0                                                                              | 21.7                                                                              | 31.6                                                                              | 15.6                                                                              | 40.7                                                                              | 13.2                                                                               | 40.1                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.4                                                                               | 6.2                                                                               | 4.4                                                                               | 5.9                                                                               | 4.4                                                                               | * 6.2                                                                             | 4.4                                                                                | * 5.9                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 8.2                                                                               | 38.1                                                                              | 17.8                                                                              | 40.0                                                                              | 11.2                                                                              | * 36                                                                              | 13.1                                                                               | * 45                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 6.9                                                                               | 26.2                                                                              | 17.2                                                                              | 10.5                                                                              | 11.2                                                                              | 31.3                                                                              | 8.6                                                                                | 26.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.1                                                                               | 8.8                                                                               | 0.1                                                                               | 9.0                                                                               | 0.0                                                                               | 3.2                                                                               | 0.3                                                                                | 7.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          | 44.6                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# HCM 2010 Signalized Intersection Summary

## 8: West Bernardo Dr & Duenda Rd

3/17/2016

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |  |  |  |                                                                                     |  |  |                                                                                     |
| Traffic Volume (veh/h)       | 30                                                                                | 140                                                                               | 141                                                                               | 90                                                                                | 90                                                                                | 80                                                                                | 74                                                                                 | 170                                                                                 | 110                                                                                 | 130                                                                                 | 230                                                                                 | 20                                                                                  |
| Future Volume (veh/h)        | 30                                                                                | 140                                                                               | 141                                                                               | 90                                                                                | 90                                                                                | 80                                                                                | 74                                                                                 | 170                                                                                 | 110                                                                                 | 130                                                                                 | 230                                                                                 | 20                                                                                  |
| Number                       | 7                                                                                 | 4                                                                                 | 14                                                                                | 3                                                                                 | 8                                                                                 | 18                                                                                | 5                                                                                  | 2                                                                                   | 12                                                                                  | 1                                                                                   | 6                                                                                   | 16                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.98                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.98                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                               | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 33                                                                                | 152                                                                               | 153                                                                               | 98                                                                                | 98                                                                                | 87                                                                                | 80                                                                                 | 185                                                                                 | 120                                                                                 | 141                                                                                 | 250                                                                                 | 22                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 1                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                 | 1                                                                                  | 2                                                                                   | 0                                                                                   | 1                                                                                   | 2                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 414                                                                               | 197                                                                               | 198                                                                               | 186                                                                               | 195                                                                               | 166                                                                               | 102                                                                                | 366                                                                                 | 226                                                                                 | 183                                                                                 | 723                                                                                 | 63                                                                                  |
| Arrive On Green              | 0.23                                                                              | 0.23                                                                              | 0.23                                                                              | 0.10                                                                              | 0.10                                                                              | 0.10                                                                              | 0.06                                                                               | 0.17                                                                                | 0.17                                                                                | 0.10                                                                                | 0.22                                                                                | 0.22                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 845                                                                               | 851                                                                               | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                               | 2105                                                                                | 1299                                                                                | 1774                                                                                | 3287                                                                                | 287                                                                                 |
| Grp Volume(v), veh/h         | 33                                                                                | 0                                                                                 | 305                                                                               | 98                                                                                | 98                                                                                | 87                                                                                | 80                                                                                 | 154                                                                                 | 151                                                                                 | 141                                                                                 | 134                                                                                 | 138                                                                                 |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 0                                                                                 | 1696                                                                              | 1774                                                                              | 1863                                                                              | 1583                                                                              | 1774                                                                               | 1770                                                                                | 1634                                                                                | 1774                                                                                | 1770                                                                                | 1805                                                                                |
| Q Serve(g_s), s              | 0.8                                                                               | 0.0                                                                               | 8.7                                                                               | 2.7                                                                               | 2.6                                                                               | 2.7                                                                               | 2.3                                                                                | 4.1                                                                                 | 4.4                                                                                 | 4.0                                                                                 | 3.3                                                                                 | 3.4                                                                                 |
| Cycle Q Clear(g_c), s        | 0.8                                                                               | 0.0                                                                               | 8.7                                                                               | 2.7                                                                               | 2.6                                                                               | 2.7                                                                               | 2.3                                                                                | 4.1                                                                                 | 4.4                                                                                 | 4.0                                                                                 | 3.3                                                                                 | 3.4                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.50                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.79                                                                                | 1.00                                                                                |                                                                                     | 0.16                                                                                |
| Lane Grp Cap(c), veh/h       | 414                                                                               | 0                                                                                 | 395                                                                               | 186                                                                               | 195                                                                               | 166                                                                               | 102                                                                                | 308                                                                                 | 284                                                                                 | 183                                                                                 | 389                                                                                 | 397                                                                                 |
| V/C Ratio(X)                 | 0.08                                                                              | 0.00                                                                              | 0.77                                                                              | 0.53                                                                              | 0.50                                                                              | 0.52                                                                              | 0.78                                                                               | 0.50                                                                                | 0.53                                                                                | 0.77                                                                                | 0.34                                                                                | 0.35                                                                                |
| Avail Cap(c_a), veh/h        | 682                                                                               | 0                                                                                 | 652                                                                               | 614                                                                               | 645                                                                               | 548                                                                               | 307                                                                                | 681                                                                                 | 628                                                                                 | 409                                                                                 | 783                                                                                 | 798                                                                                 |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 0.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Uniform Delay (d), s/veh     | 15.6                                                                              | 0.0                                                                               | 18.6                                                                              | 22.1                                                                              | 22.0                                                                              | 22.0                                                                              | 24.2                                                                               | 19.4                                                                                | 19.5                                                                                | 22.7                                                                                | 17.1                                                                                | 17.1                                                                                |
| Incr Delay (d2), s/veh       | 0.1                                                                               | 0.0                                                                               | 3.2                                                                               | 2.3                                                                               | 2.0                                                                               | 2.5                                                                               | 12.2                                                                               | 1.3                                                                                 | 1.5                                                                                 | 6.6                                                                                 | 0.5                                                                                 | 0.5                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.4                                                                               | 0.0                                                                               | 4.4                                                                               | 1.5                                                                               | 1.4                                                                               | 1.3                                                                               | 1.5                                                                                | 2.1                                                                                 | 2.1                                                                                 | 2.3                                                                                 | 1.7                                                                                 | 1.7                                                                                 |
| LnGrp Delay(d),s/veh         | 15.7                                                                              | 0.0                                                                               | 21.9                                                                              | 24.4                                                                              | 24.0                                                                              | 24.6                                                                              | 36.4                                                                               | 20.7                                                                                | 21.1                                                                                | 29.3                                                                                | 17.6                                                                                | 17.7                                                                                |
| LnGrp LOS                    | B                                                                                 |                                                                                   | C                                                                                 | C                                                                                 | C                                                                                 | C                                                                                 | D                                                                                  | C                                                                                   | C                                                                                   | C                                                                                   | B                                                                                   | B                                                                                   |
| Approach Vol, veh/h          |                                                                                   | 338                                                                               |                                                                                   |                                                                                   | 283                                                                               |                                                                                   |                                                                                    | 385                                                                                 |                                                                                     |                                                                                     | 413                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 21.3                                                                              |                                                                                   |                                                                                   | 24.3                                                                              |                                                                                   |                                                                                    | 24.1                                                                                |                                                                                     |                                                                                     | 21.6                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 10.4                                                                              | 14.0                                                                              |                                                                                   | 17.1                                                                              | 8.0                                                                               | 16.4                                                                              |                                                                                    | 10.5                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 5.0                                                                               | 5.0                                                                               |                                                                                   | 5.0                                                                               | 5.0                                                                               | 5.0                                                                               |                                                                                    | 5.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 12.0                                                                              | 20.0                                                                              |                                                                                   | 20.0                                                                              | 9.0                                                                               | 23.0                                                                              |                                                                                    | 18.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 6.0                                                                               | 6.4                                                                               |                                                                                   | 10.7                                                                              | 4.3                                                                               | 5.4                                                                               |                                                                                    | 4.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.2                                                                               | 2.7                                                                               |                                                                                   | 1.4                                                                               | 0.1                                                                               | 3.0                                                                               |                                                                                    | 0.8                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 22.7                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 9: West Bernardo Dr & Via Del Campo

3/17/2016

|                              |  |  |  |  |  |  |   |   |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---|---|
| Movement                     | EBL                                                                               | EBT                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                               |   |   |
| Lane Configurations          |  |  |  |                                                                                   |  |  |   |   |
| Traffic Volume (veh/h)       | 68                                                                                | 540                                                                               | 580                                                                               | 50                                                                                | 200                                                                               | 444                                                                               |   |   |
| Future Volume (veh/h)        | 68                                                                                | 540                                                                               | 580                                                                               | 50                                                                                | 200                                                                               | 444                                                                               |   |   |
| Number                       | 5                                                                                 | 2                                                                                 | 6                                                                                 | 16                                                                                | 7                                                                                 | 14                                                                                |   |   |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 |   |   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              |   |   |
| Adj Flow Rate, veh/h         | 74                                                                                | 587                                                                               | 630                                                                               | 54                                                                                | 217                                                                               | 483                                                                               |   |   |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 1                                                                                 |   |   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              |   |   |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 |   |   |
| Cap, veh/h                   | 96                                                                                | 1958                                                                              | 1488                                                                              | 127                                                                               | 595                                                                               | 531                                                                               |   |   |
| Arrive On Green              | 0.05                                                                              | 0.55                                                                              | 0.45                                                                              | 0.45                                                                              | 0.34                                                                              | 0.34                                                                              |   |   |
| Sat Flow, veh/h              | 1774                                                                              | 3632                                                                              | 3393                                                                              | 282                                                                               | 1774                                                                              | 1583                                                                              |   |   |
| Grp Volume(v), veh/h         | 74                                                                                | 587                                                                               | 337                                                                               | 347                                                                               | 217                                                                               | 483                                                                               |   |   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1770                                                                              | 1813                                                                              | 1774                                                                              | 1583                                                                              |   |   |
| Q Serve(g_s), s              | 3.8                                                                               | 8.1                                                                               | 11.8                                                                              | 11.8                                                                              | 8.5                                                                               | 26.6                                                                              |   |   |
| Cycle Q Clear(g_c), s        | 3.8                                                                               | 8.1                                                                               | 11.8                                                                              | 11.8                                                                              | 8.5                                                                               | 26.6                                                                              |   |   |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   | 0.16                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Lane Grp Cap(c), veh/h       | 96                                                                                | 1958                                                                              | 798                                                                               | 818                                                                               | 595                                                                               | 531                                                                               |   |   |
| V/C Ratio(X)                 | 0.77                                                                              | 0.30                                                                              | 0.42                                                                              | 0.42                                                                              | 0.37                                                                              | 0.91                                                                              |   |   |
| Avail Cap(c_a), veh/h        | 225                                                                               | 1958                                                                              | 798                                                                               | 818                                                                               | 764                                                                               | 682                                                                               |   |   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              |   |   |
| Uniform Delay (d), s/veh     | 42.6                                                                              | 10.9                                                                              | 17.0                                                                              | 17.0                                                                              | 23.0                                                                              | 29.0                                                                              |   |   |
| Incr Delay (d2), s/veh       | 12.3                                                                              | 0.4                                                                               | 1.6                                                                               | 1.6                                                                               | 0.4                                                                               | 13.9                                                                              |   |   |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               |   |   |
| %ile BackOfQ(50%),veh/ln     | 2.2                                                                               | 4.0                                                                               | 6.1                                                                               | 6.2                                                                               | 4.2                                                                               | 22.4                                                                              |   |   |
| LnGrp Delay(d),s/veh         | 55.0                                                                              | 11.3                                                                              | 18.6                                                                              | 18.6                                                                              | 23.4                                                                              | 42.9                                                                              |   |   |
| LnGrp LOS                    | D                                                                                 | B                                                                                 | B                                                                                 | B                                                                                 | C                                                                                 | D                                                                                 |   |   |
| Approach Vol, veh/h          |                                                                                   | 661                                                                               | 684                                                                               |                                                                                   | 700                                                                               |                                                                                   |   |   |
| Approach Delay, s/veh        |                                                                                   | 16.2                                                                              | 18.6                                                                              |                                                                                   | 36.9                                                                              |                                                                                   |   |   |
| Approach LOS                 |                                                                                   | B                                                                                 | B                                                                                 |                                                                                   | D                                                                                 |                                                                                   |   |   |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7 | 8 |
| Assigned Phs                 |                                                                                   | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |   |   |
| Phs Duration (G+Y+Rc), s     |                                                                                   | 56.0                                                                              |                                                                                   | 35.3                                                                              | 9.3                                                                               | 46.7                                                                              |   |   |
| Change Period (Y+Rc), s      |                                                                                   | 5.5                                                                               |                                                                                   | * 4.7                                                                             | 4.4                                                                               | 5.5                                                                               |   |   |
| Max Green Setting (Gmax), s  |                                                                                   | 50.5                                                                              |                                                                                   | * 39                                                                              | 11.6                                                                              | 34.5                                                                              |   |   |
| Max Q Clear Time (g_c+I1), s |                                                                                   | 10.1                                                                              |                                                                                   | 28.6                                                                              | 5.8                                                                               | 13.8                                                                              |   |   |
| Green Ext Time (p_c), s      |                                                                                   | 9.7                                                                               |                                                                                   | 1.9                                                                               | 0.1                                                                               | 8.0                                                                               |   |   |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 24.1                                                                              |                                                                                   |                                                                                   |                                                                                   |   |   |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |   |   |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |   |   |

# HCM 2010 Signalized Intersection Summary

## 10: Bernardo Center Dr & West Bernardo Dr

3/17/2016

|                              |  |  |  |  |  |  |  |      |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|
| Movement                     | EBL                                                                               | EBT                                                                               | WBU                                                                               | WBT                                                                               | WBR                                                                               | SBL                                                                               | SBR                                                                                 |      |
| Lane Configurations          |  |  |  |  |  |  |  |      |
| Traffic Volume (veh/h)       | 494                                                                               | 500                                                                               | 0                                                                                 | 480                                                                               | 474                                                                               | 437                                                                               | 587                                                                                 |      |
| Future Volume (veh/h)        | 494                                                                               | 500                                                                               | 0                                                                                 | 480                                                                               | 474                                                                               | 437                                                                               | 587                                                                                 |      |
| Number                       | 1                                                                                 | 6                                                                                 |                                                                                   | 2                                                                                 | 12                                                                                | 3                                                                                 | 18                                                                                  |      |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 |                                                                                   | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   |      |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              |                                                                                   | 1863                                                                              | 1863                                                                              | 1863                                                                              | 1863                                                                                |      |
| Adj Flow Rate, veh/h         | 526                                                                               | 532                                                                               |                                                                                   | 511                                                                               | 504                                                                               | 465                                                                               | 624                                                                                 |      |
| Adj No. of Lanes             | 2                                                                                 | 2                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 | 1                                                                                 | 1                                                                                   |      |
| Peak Hour Factor             | 0.94                                                                              | 0.94                                                                              |                                                                                   | 0.94                                                                              | 0.94                                                                              | 0.94                                                                              | 0.94                                                                                |      |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 |                                                                                   | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                   |      |
| Cap, veh/h                   | 647                                                                               | 1822                                                                              |                                                                                   | 954                                                                               | 1744                                                                              | 633                                                                               | 863                                                                                 |      |
| Arrive On Green              | 0.19                                                                              | 0.51                                                                              |                                                                                   | 0.27                                                                              | 0.27                                                                              | 0.36                                                                              | 0.36                                                                                |      |
| Sat Flow, veh/h              | 3442                                                                              | 3632                                                                              |                                                                                   | 3632                                                                              | 2781                                                                              | 1774                                                                              | 1583                                                                                |      |
| Grp Volume(v), veh/h         | 526                                                                               | 532                                                                               |                                                                                   | 511                                                                               | 504                                                                               | 465                                                                               | 624                                                                                 |      |
| Grp Sat Flow(s),veh/h/ln     | 1721                                                                              | 1770                                                                              |                                                                                   | 1770                                                                              | 1391                                                                              | 1774                                                                              | 1583                                                                                |      |
| Q Serve(g_s), s              | 11.3                                                                              | 6.6                                                                               |                                                                                   | 9.5                                                                               | 6.4                                                                               | 17.6                                                                              | 22.8                                                                                |      |
| Cycle Q Clear(g_c), s        | 11.3                                                                              | 6.6                                                                               |                                                                                   | 9.5                                                                               | 6.4                                                                               | 17.6                                                                              | 22.8                                                                                |      |
| Prop In Lane                 | 1.00                                                                              |                                                                                   |                                                                                   |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Lane Grp Cap(c), veh/h       | 647                                                                               | 1822                                                                              |                                                                                   | 954                                                                               | 1744                                                                              | 633                                                                               | 863                                                                                 |      |
| V/C Ratio(X)                 | 0.81                                                                              | 0.29                                                                              |                                                                                   | 0.54                                                                              | 0.29                                                                              | 0.73                                                                              | 0.72                                                                                |      |
| Avail Cap(c_a), veh/h        | 921                                                                               | 2284                                                                              |                                                                                   | 1493                                                                              | 2168                                                                              | 751                                                                               | 968                                                                                 |      |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                |      |
| Uniform Delay (d), s/veh     | 30.0                                                                              | 10.7                                                                              |                                                                                   | 24.0                                                                              | 6.6                                                                               | 21.6                                                                              | 13.2                                                                                |      |
| Incr Delay (d2), s/veh       | 3.8                                                                               | 0.1                                                                               |                                                                                   | 0.5                                                                               | 0.1                                                                               | 3.1                                                                               | 2.4                                                                                 |      |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 |      |
| %ile BackOfQ(50%),veh/ln     | 5.7                                                                               | 3.2                                                                               |                                                                                   | 4.7                                                                               | 2.5                                                                               | 9.1                                                                               | 10.5                                                                                |      |
| LnGrp Delay(d),s/veh         | 33.8                                                                              | 10.8                                                                              |                                                                                   | 24.5                                                                              | 6.7                                                                               | 24.7                                                                              | 15.5                                                                                |      |
| LnGrp LOS                    | C                                                                                 | B                                                                                 |                                                                                   | C                                                                                 | A                                                                                 | C                                                                                 | B                                                                                   |      |
| Approach Vol, veh/h          |                                                                                   | 1058                                                                              |                                                                                   | 1015                                                                              |                                                                                   | 1089                                                                              |                                                                                     |      |
| Approach Delay, s/veh        |                                                                                   | 22.2                                                                              |                                                                                   | 15.6                                                                              |                                                                                   | 19.4                                                                              |                                                                                     |      |
| Approach LOS                 |                                                                                   | C                                                                                 |                                                                                   | B                                                                                 |                                                                                   | B                                                                                 |                                                                                     |      |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                   | 8    |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   | 6                                                                                 |                                                                                     | 8    |
| Phs Duration (G+Y+Rc), s     | 18.9                                                                              | 26.3                                                                              |                                                                                   |                                                                                   |                                                                                   | 45.1                                                                              |                                                                                     | 31.9 |
| Change Period (Y+Rc), s      | 4.4                                                                               | 5.5                                                                               |                                                                                   |                                                                                   |                                                                                   | * 5.5                                                                             |                                                                                     | 4.4  |
| Max Green Setting (Gmax), s  | 20.6                                                                              | 32.5                                                                              |                                                                                   |                                                                                   |                                                                                   | * 50                                                                              |                                                                                     | 32.6 |
| Max Q Clear Time (g_c+I1), s | 13.3                                                                              | 11.5                                                                              |                                                                                   |                                                                                   |                                                                                   | 8.6                                                                               |                                                                                     | 24.8 |
| Green Ext Time (p_c), s      | 1.2                                                                               | 9.2                                                                               |                                                                                   |                                                                                   |                                                                                   | 11.5                                                                              |                                                                                     | 2.7  |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   | 19.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| HCM 2010 LOS                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |      |

## **APPENDIX K**

### **PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS POST-MITIGATION**

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |  |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 10                                                                                | 1114                                                                              | 400                                                                               | 713                                                                               | 1356                                                                              | 10                                                                                | 80                                                                                 | 10                                                                                  | 77                                                                                  | 10                                                                                  | 10                                                                                  | 10                                                                                  |
| Future Volume (veh/h)        | 10                                                                                | 1114                                                                              | 400                                                                               | 713                                                                               | 1356                                                                              | 10                                                                                | 80                                                                                 | 10                                                                                  | 77                                                                                  | 10                                                                                  | 10                                                                                  | 10                                                                                  |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 0.98                                                                              | 1.00                                                                              |                                                                                   | 0.98                                                                              | 1.00                                                                               |                                                                                     | 0.99                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 11                                                                                | 1211                                                                              | 435                                                                               | 775                                                                               | 1474                                                                              | 11                                                                                | 87                                                                                 | 11                                                                                  | 84                                                                                  | 11                                                                                  | 11                                                                                  | 11                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                  | 1                                                                                   | 1                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 18                                                                                | 1108                                                                              | 385                                                                               | 656                                                                               | 2852                                                                              | 21                                                                                | 172                                                                                | 148                                                                                 | 124                                                                                 | 64                                                                                  | 59                                                                                  | 43                                                                                  |
| Arrive On Green              | 0.01                                                                              | 0.43                                                                              | 0.43                                                                              | 0.37                                                                              | 0.79                                                                              | 0.79                                                                              | 0.08                                                                               | 0.08                                                                                | 0.08                                                                                | 0.08                                                                                | 0.08                                                                                | 0.08                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 2561                                                                              | 890                                                                               | 1774                                                                              | 3600                                                                              | 27                                                                                | 1379                                                                               | 1863                                                                                | 1560                                                                                | 342                                                                                 | 735                                                                                 | 539                                                                                 |
| Grp Volume(v), veh/h         | 11                                                                                | 824                                                                               | 822                                                                               | 775                                                                               | 724                                                                               | 761                                                                               | 87                                                                                 | 11                                                                                  | 84                                                                                  | 33                                                                                  | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1681                                                                              | 1774                                                                              | 1770                                                                              | 1857                                                                              | 1379                                                                               | 1863                                                                                | 1560                                                                                | 1616                                                                                | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 0.8                                                                               | 56.9                                                                              | 56.9                                                                              | 48.6                                                                              | 18.9                                                                              | 18.9                                                                              | 5.1                                                                                | 0.7                                                                                 | 6.9                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 0.8                                                                               | 56.9                                                                              | 56.9                                                                              | 48.6                                                                              | 18.9                                                                              | 18.9                                                                              | 7.4                                                                                | 0.7                                                                                 | 6.9                                                                                 | 2.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.53                                                                              | 1.00                                                                              |                                                                                   | 0.01                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 0.33                                                                                |                                                                                     | 0.33                                                                                |
| Lane Grp Cap(c), veh/h       | 18                                                                                | 766                                                                               | 728                                                                               | 656                                                                               | 1402                                                                              | 1472                                                                              | 172                                                                                | 148                                                                                 | 124                                                                                 | 165                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.62                                                                              | 1.08                                                                              | 1.13                                                                              | 1.18                                                                              | 0.52                                                                              | 0.52                                                                              | 0.51                                                                               | 0.07                                                                                | 0.68                                                                                | 0.20                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 54                                                                                | 766                                                                               | 728                                                                               | 656                                                                               | 1402                                                                              | 1472                                                                              | 366                                                                                | 411                                                                                 | 344                                                                                 | 386                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 64.8                                                                              | 37.3                                                                              | 37.3                                                                              | 41.4                                                                              | 4.8                                                                               | 4.8                                                                               | 58.9                                                                               | 56.0                                                                                | 58.8                                                                                | 56.7                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 29.8                                                                              | 55.1                                                                              | 74.9                                                                              | 96.9                                                                              | 0.3                                                                               | 0.3                                                                               | 2.3                                                                                | 0.2                                                                                 | 6.2                                                                                 | 0.6                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 0.5                                                                               | 39.4                                                                              | 41.4                                                                              | 41.3                                                                              | 9.2                                                                               | 9.6                                                                               | 3.2                                                                                | 0.4                                                                                 | 3.2                                                                                 | 1.2                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 94.6                                                                              | 92.4                                                                              | 112.2                                                                             | 138.3                                                                             | 5.1                                                                               | 5.1                                                                               | 61.2                                                                               | 56.2                                                                                | 65.1                                                                                | 57.3                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | F                                                                                 | F                                                                                 | F                                                                                 | F                                                                                 | A                                                                                 | A                                                                                 | E                                                                                  | E                                                                                   | E                                                                                   | E                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1657                                                                              |                                                                                   |                                                                                   | 2260                                                                              |                                                                                   |                                                                                    | 182                                                                                 |                                                                                     |                                                                                     | 33                                                                                  |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 102.2                                                                             |                                                                                   |                                                                                   | 50.8                                                                              |                                                                                   |                                                                                    | 62.7                                                                                |                                                                                     |                                                                                     | 57.3                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | E                                                                                   |                                                                                     |                                                                                     | E                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 53.0                                                                              | 62.8                                                                              |                                                                                   | 15.7                                                                              | 5.7                                                                               | 110.1                                                                             |                                                                                    | 15.7                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.4                                                                               | 5.9                                                                               |                                                                                   | * 5.2                                                                             | 4.4                                                                               | * 5.9                                                                             |                                                                                    | 5.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 48.6                                                                              | 56.9                                                                              |                                                                                   | * 29                                                                              | 4.0                                                                               | * 1E2                                                                             |                                                                                    | 29.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 50.6                                                                              | 58.9                                                                              |                                                                                   | 4.3                                                                               | 2.8                                                                               | 20.9                                                                              |                                                                                    | 9.4                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.7                                                                               | 0.0                                                                               | 52.2                                                                              |                                                                                    | 0.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 72.0                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

|                              |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 40                                                                                | 920                                                                               | 156                                                                               | 479                                                                               | 1770                                                                              | 20                                                                                | 39                                                                                 | 3                                                                                   | 120                                                                                 | 90                                                                                  | 13                                                                                  | 150                                                                                 |
| Future Volume (veh/h)        | 40                                                                                | 920                                                                               | 156                                                                               | 479                                                                               | 1770                                                                              | 20                                                                                | 39                                                                                 | 3                                                                                   | 120                                                                                 | 90                                                                                  | 13                                                                                  | 150                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.99                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1900                                                                               | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 43                                                                                | 1000                                                                              | 170                                                                               | 521                                                                               | 1924                                                                              | 22                                                                                | 42                                                                                 | 3                                                                                   | 130                                                                                 | 98                                                                                  | 14                                                                                  | 163                                                                                 |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 0                                                                                  | 1                                                                                   | 1                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 55                                                                                | 980                                                                               | 166                                                                               | 503                                                                               | 2164                                                                              | 25                                                                                | 235                                                                                | 15                                                                                  | 367                                                                                 | 140                                                                                 | 30                                                                                  | 181                                                                                 |
| Arrive On Green              | 0.03                                                                              | 0.32                                                                              | 0.32                                                                              | 0.28                                                                              | 0.60                                                                              | 0.60                                                                              | 0.23                                                                               | 0.23                                                                                | 0.23                                                                                | 0.23                                                                                | 0.23                                                                                | 0.23                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 3028                                                                              | 514                                                                               | 1774                                                                              | 3584                                                                              | 41                                                                                | 739                                                                                | 63                                                                                  | 1583                                                                                | 409                                                                                 | 128                                                                                 | 782                                                                                 |
| Grp Volume(v), veh/h         | 43                                                                                | 584                                                                               | 586                                                                               | 521                                                                               | 948                                                                               | 998                                                                               | 45                                                                                 | 0                                                                                   | 130                                                                                 | 275                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1772                                                                              | 1774                                                                              | 1770                                                                              | 1856                                                                              | 803                                                                                | 0                                                                                   | 1583                                                                                | 1319                                                                                | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 2.6                                                                               | 35.4                                                                              | 35.4                                                                              | 31.0                                                                              | 50.0                                                                              | 50.4                                                                              | 0.0                                                                                | 0.0                                                                                 | 7.5                                                                                 | 17.3                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 2.6                                                                               | 35.4                                                                              | 35.4                                                                              | 31.0                                                                              | 50.0                                                                              | 50.4                                                                              | 5.2                                                                                | 0.0                                                                                 | 7.5                                                                                 | 22.5                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.29                                                                              | 1.00                                                                              |                                                                                   | 0.02                                                                              | 0.93                                                                               |                                                                                     | 1.00                                                                                | 0.36                                                                                |                                                                                     | 0.59                                                                                |
| Lane Grp Cap(c), veh/h       | 55                                                                                | 573                                                                               | 574                                                                               | 503                                                                               | 1068                                                                              | 1120                                                                              | 250                                                                                | 0                                                                                   | 367                                                                                 | 350                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.78                                                                              | 1.02                                                                              | 1.02                                                                              | 1.04                                                                              | 0.89                                                                              | 0.89                                                                              | 0.18                                                                               | 0.00                                                                                | 0.35                                                                                | 0.78                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 65                                                                                | 573                                                                               | 574                                                                               | 503                                                                               | 1068                                                                              | 1120                                                                              | 286                                                                                | 0                                                                                   | 414                                                                                 | 386                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 52.6                                                                              | 37.0                                                                              | 37.0                                                                              | 39.2                                                                              | 18.5                                                                              | 18.6                                                                              | 34.2                                                                               | 0.0                                                                                 | 35.1                                                                                | 41.6                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 39.9                                                                              | 42.6                                                                              | 43.1                                                                              | 49.7                                                                              | 9.2                                                                               | 9.2                                                                               | 0.3                                                                                | 0.0                                                                                 | 0.6                                                                                 | 9.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 1.9                                                                               | 24.0                                                                              | 24.1                                                                              | 22.0                                                                              | 27.0                                                                              | 28.4                                                                              | 1.1                                                                                | 0.0                                                                                 | 3.3                                                                                 | 9.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 92.6                                                                              | 79.6                                                                              | 80.1                                                                              | 88.9                                                                              | 27.7                                                                              | 27.7                                                                              | 34.5                                                                               | 0.0                                                                                 | 35.7                                                                                | 51.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | F                                                                                 | F                                                                                 | F                                                                                 | F                                                                                 | C                                                                                 | C                                                                                 | C                                                                                  |                                                                                     | D                                                                                   | D                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1213                                                                              |                                                                                   |                                                                                   | 2467                                                                              |                                                                                   |                                                                                    | 175                                                                                 |                                                                                     |                                                                                     | 275                                                                                 |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 80.3                                                                              |                                                                                   |                                                                                   | 40.6                                                                              |                                                                                   |                                                                                    | 35.4                                                                                |                                                                                     |                                                                                     | 51.0                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | F                                                                                 |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                    | D                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 37.0                                                                              | 42.4                                                                              |                                                                                   | 30.0                                                                              | 7.4                                                                               | 72.0                                                                              |                                                                                    | 30.0                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 6.0                                                                               | * 7                                                                               |                                                                                   | 4.6                                                                               | 4.0                                                                               | 6.0                                                                               |                                                                                    | * 4.6                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 31.0                                                                              | * 35                                                                              |                                                                                   | 28.0                                                                              | 4.0                                                                               | 63.4                                                                              |                                                                                    | * 29                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 33.0                                                                              | 37.4                                                                              |                                                                                   | 24.5                                                                              | 4.6                                                                               | 52.4                                                                              |                                                                                    | 9.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.9                                                                               | 0.0                                                                               | 9.1                                                                               |                                                                                    | 2.5                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 52.8                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM 2010 Signalized Intersection Summary

## 2: Via Del Campo & Rancho Bernardo Rd

3/16/2016

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|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |  |  |  |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 20                                                                                | 1488                                                                              | 70                                                                                | 49                                                                                | 1069                                                                              | 10                                                                                | 370                                                                                | 10                                                                                  | 469                                                                                 | 10                                                                                  | 10                                                                                  | 10                                                                                  |
| Future Volume (veh/h)        | 20                                                                                | 1488                                                                              | 70                                                                                | 49                                                                                | 1069                                                                              | 10                                                                                | 370                                                                                | 10                                                                                  | 469                                                                                 | 10                                                                                  | 10                                                                                  | 10                                                                                  |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 0.98                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                               | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 22                                                                                | 1617                                                                              | 76                                                                                | 53                                                                                | 1162                                                                              | 11                                                                                | 402                                                                                | 11                                                                                  | 510                                                                                 | 11                                                                                  | 11                                                                                  | 11                                                                                  |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                  | 1                                                                                   | 1                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 30                                                                                | 1666                                                                              | 78                                                                                | 68                                                                                | 1814                                                                              | 17                                                                                | 510                                                                                | 536                                                                                 | 448                                                                                 | 14                                                                                  | 14                                                                                  | 14                                                                                  |
| Arrive On Green              | 0.02                                                                              | 0.48                                                                              | 0.48                                                                              | 0.04                                                                              | 0.50                                                                              | 0.50                                                                              | 0.29                                                                               | 0.29                                                                                | 0.29                                                                                | 0.02                                                                                | 0.02                                                                                | 0.02                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 3443                                                                              | 161                                                                               | 1774                                                                              | 3592                                                                              | 34                                                                                | 1774                                                                               | 1863                                                                                | 1558                                                                                | 577                                                                                 | 577                                                                                 | 577                                                                                 |
| Grp Volume(v), veh/h         | 22                                                                                | 828                                                                               | 865                                                                               | 53                                                                                | 572                                                                               | 601                                                                               | 402                                                                                | 11                                                                                  | 510                                                                                 | 33                                                                                  | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1834                                                                              | 1774                                                                              | 1770                                                                              | 1857                                                                              | 1774                                                                               | 1863                                                                                | 1558                                                                                | 1732                                                                                | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 1.5                                                                               | 55.8                                                                              | 56.7                                                                              | 3.6                                                                               | 29.1                                                                              | 29.1                                                                              | 25.7                                                                               | 0.5                                                                                 | 35.4                                                                                | 2.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 1.5                                                                               | 55.8                                                                              | 56.7                                                                              | 3.6                                                                               | 29.1                                                                              | 29.1                                                                              | 25.7                                                                               | 0.5                                                                                 | 35.4                                                                                | 2.3                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.09                                                                              | 1.00                                                                              |                                                                                   | 0.02                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 0.33                                                                                |                                                                                     | 0.33                                                                                |
| Lane Grp Cap(c), veh/h       | 30                                                                                | 856                                                                               | 887                                                                               | 68                                                                                | 894                                                                               | 938                                                                               | 510                                                                                | 536                                                                                 | 448                                                                                 | 42                                                                                  | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.72                                                                              | 0.97                                                                              | 0.98                                                                              | 0.78                                                                              | 0.64                                                                              | 0.64                                                                              | 0.79                                                                               | 0.02                                                                                | 1.14                                                                                | 0.78                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 88                                                                                | 864                                                                               | 896                                                                               | 72                                                                                | 894                                                                               | 938                                                                               | 510                                                                                | 536                                                                                 | 448                                                                                 | 410                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 60.2                                                                              | 30.8                                                                              | 31.0                                                                              | 58.6                                                                              | 22.3                                                                              | 22.3                                                                              | 40.4                                                                               | 31.4                                                                                | 43.8                                                                                | 59.7                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 27.2                                                                              | 22.7                                                                              | 23.9                                                                              | 39.1                                                                              | 1.6                                                                               | 1.5                                                                               | 8.1                                                                                | 0.0                                                                                 | 85.9                                                                                | 26.0                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 1.0                                                                               | 32.5                                                                              | 34.5                                                                              | 2.5                                                                               | 14.5                                                                              | 15.2                                                                              | 13.8                                                                               | 0.3                                                                                 | 25.8                                                                                | 1.4                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 87.4                                                                              | 53.5                                                                              | 55.0                                                                              | 97.7                                                                              | 23.8                                                                              | 23.8                                                                              | 48.4                                                                               | 31.4                                                                                | 129.7                                                                               | 85.7                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | F                                                                                 | D                                                                                 | D                                                                                 | F                                                                                 | C                                                                                 | C                                                                                 | D                                                                                  | C                                                                                   | F                                                                                   | F                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          |                                                                                   | 1715                                                                              |                                                                                   |                                                                                   | 1226                                                                              |                                                                                   |                                                                                    | 923                                                                                 |                                                                                     |                                                                                     | 33                                                                                  |                                                                                     |
| Approach Delay, s/veh        |                                                                                   | 54.7                                                                              |                                                                                   |                                                                                   | 27.0                                                                              |                                                                                   |                                                                                    | 93.1                                                                                |                                                                                     |                                                                                     | 85.7                                                                                |                                                                                     |
| Approach LOS                 |                                                                                   | D                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | F                                                                                   |                                                                                     |                                                                                     | F                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 9.1                                                                               | 65.4                                                                              |                                                                                   | 7.9                                                                               | 6.5                                                                               | 68.0                                                                              |                                                                                    | 40.6                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.4                                                                               | 5.9                                                                               |                                                                                   | 4.9                                                                               | 4.4                                                                               | * 5.9                                                                             |                                                                                    | 5.2                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 5.0                                                                               | 60.1                                                                              |                                                                                   | 29.1                                                                              | 6.1                                                                               | * 59                                                                              |                                                                                    | 35.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 5.6                                                                               | 58.7                                                                              |                                                                                   | 4.3                                                                               | 3.5                                                                               | 31.1                                                                              |                                                                                    | 37.4                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.8                                                                               |                                                                                   | 0.1                                                                               | 0.0                                                                               | 21.9                                                                              |                                                                                    | 0.0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Intersection Summary</b>  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          |                                                                                   |                                                                                   |                                                                                   | 55.4                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 |                                                                                   |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| <b>Notes</b>                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |



# HCM 2010 Signalized Intersection Summary

## 3: Project Dwy/Matinal Rd & Rancho Bernardo Rd

3/16/2016

|                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                              |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement                     | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations          |  |  |                                                                                   |  |  |                                                                                   |                                                                                    |  |  |                                                                                     |  |                                                                                     |
| Traffic Volume (veh/h)       | 120                                                                               | 1670                                                                              | 87                                                                                | 268                                                                               | 990                                                                               | 60                                                                                | 58                                                                                 | 5                                                                                   | 180                                                                                 | 50                                                                                  | 7                                                                                   | 120                                                                                 |
| Future Volume (veh/h)        | 120                                                                               | 1670                                                                              | 87                                                                                | 268                                                                               | 990                                                                               | 60                                                                                | 58                                                                                 | 5                                                                                   | 180                                                                                 | 50                                                                                  | 7                                                                                   | 120                                                                                 |
| Number                       | 5                                                                                 | 2                                                                                 | 12                                                                                | 1                                                                                 | 6                                                                                 | 16                                                                                | 3                                                                                  | 8                                                                                   | 18                                                                                  | 7                                                                                   | 4                                                                                   | 14                                                                                  |
| Initial Q (Qb), veh          | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Ped-Bike Adj(A_pbT)          | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                               |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     | 0.99                                                                                |
| Parking Bus, Adj             | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Adj Sat Flow, veh/h/ln       | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1863                                                                              | 1863                                                                              | 1900                                                                              | 1900                                                                               | 1863                                                                                | 1863                                                                                | 1900                                                                                | 1863                                                                                | 1900                                                                                |
| Adj Flow Rate, veh/h         | 130                                                                               | 1815                                                                              | 95                                                                                | 291                                                                               | 1076                                                                              | 65                                                                                | 63                                                                                 | 5                                                                                   | 196                                                                                 | 54                                                                                  | 8                                                                                   | 130                                                                                 |
| Adj No. of Lanes             | 1                                                                                 | 2                                                                                 | 0                                                                                 | 1                                                                                 | 2                                                                                 | 0                                                                                 | 0                                                                                  | 1                                                                                   | 1                                                                                   | 0                                                                                   | 1                                                                                   | 0                                                                                   |
| Peak Hour Factor             | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                              | 0.92                                                                               | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                | 0.92                                                                                |
| Percent Heavy Veh, %         | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                 | 2                                                                                  | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   | 2                                                                                   |
| Cap, veh/h                   | 153                                                                               | 1830                                                                              | 95                                                                                | 308                                                                               | 2109                                                                              | 127                                                                               | 150                                                                                | 10                                                                                  | 298                                                                                 | 66                                                                                  | 22                                                                                  | 119                                                                                 |
| Arrive On Green              | 0.09                                                                              | 0.53                                                                              | 0.53                                                                              | 0.17                                                                              | 0.62                                                                              | 0.62                                                                              | 0.19                                                                               | 0.19                                                                                | 0.19                                                                                | 0.19                                                                                | 0.19                                                                                | 0.19                                                                                |
| Sat Flow, veh/h              | 1774                                                                              | 3423                                                                              | 178                                                                               | 1774                                                                              | 3391                                                                              | 205                                                                               | 551                                                                                | 54                                                                                  | 1583                                                                                | 186                                                                                 | 117                                                                                 | 634                                                                                 |
| Grp Volume(v), veh/h         | 130                                                                               | 931                                                                               | 979                                                                               | 291                                                                               | 561                                                                               | 580                                                                               | 68                                                                                 | 0                                                                                   | 196                                                                                 | 192                                                                                 | 0                                                                                   | 0                                                                                   |
| Grp Sat Flow(s),veh/h/ln     | 1774                                                                              | 1770                                                                              | 1831                                                                              | 1774                                                                              | 1770                                                                              | 1827                                                                              | 605                                                                                | 0                                                                                   | 1583                                                                                | 937                                                                                 | 0                                                                                   | 0                                                                                   |
| Q Serve(g_s), s              | 10.8                                                                              | 77.5                                                                              | 80.2                                                                              | 24.3                                                                              | 26.3                                                                              | 26.4                                                                              | 0.0                                                                                | 0.0                                                                                 | 17.2                                                                                | 12.9                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Cycle Q Clear(g_c), s        | 10.8                                                                              | 77.5                                                                              | 80.2                                                                              | 24.3                                                                              | 26.3                                                                              | 26.4                                                                              | 15.3                                                                               | 0.0                                                                                 | 17.2                                                                                | 28.2                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Prop In Lane                 | 1.00                                                                              |                                                                                   | 0.10                                                                              | 1.00                                                                              |                                                                                   | 0.11                                                                              | 0.93                                                                               |                                                                                     | 1.00                                                                                | 0.28                                                                                |                                                                                     | 0.68                                                                                |
| Lane Grp Cap(c), veh/h       | 153                                                                               | 946                                                                               | 979                                                                               | 308                                                                               | 1100                                                                              | 1136                                                                              | 160                                                                                | 0                                                                                   | 298                                                                                 | 207                                                                                 | 0                                                                                   | 0                                                                                   |
| V/C Ratio(X)                 | 0.85                                                                              | 0.98                                                                              | 1.00                                                                              | 0.95                                                                              | 0.51                                                                              | 0.51                                                                              | 0.43                                                                               | 0.00                                                                                | 0.66                                                                                | 0.93                                                                                | 0.00                                                                                | 0.00                                                                                |
| Avail Cap(c_a), veh/h        | 225                                                                               | 946                                                                               | 979                                                                               | 308                                                                               | 1100                                                                              | 1136                                                                              | 165                                                                                | 0                                                                                   | 304                                                                                 | 207                                                                                 | 0                                                                                   | 0                                                                                   |
| HCM Platoon Ratio            | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                | 1.00                                                                                |
| Upstream Filter(I)           | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                               | 0.00                                                                                | 1.00                                                                                | 1.00                                                                                | 0.00                                                                                | 0.00                                                                                |
| Uniform Delay (d), s/veh     | 67.6                                                                              | 34.3                                                                              | 34.9                                                                              | 61.3                                                                              | 15.7                                                                              | 15.7                                                                              | 55.5                                                                               | 0.0                                                                                 | 56.4                                                                                | 63.8                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Incr Delay (d2), s/veh       | 18.0                                                                              | 25.3                                                                              | 28.7                                                                              | 37.2                                                                              | 0.4                                                                               | 0.4                                                                               | 1.8                                                                                | 0.0                                                                                 | 5.0                                                                                 | 42.9                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| Initial Q Delay(d3),s/veh    | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| %ile BackOfQ(50%),veh/ln     | 6.1                                                                               | 44.4                                                                              | 48.0                                                                              | 15.1                                                                              | 12.9                                                                              | 13.3                                                                              | 2.6                                                                                | 0.0                                                                                 | 8.0                                                                                 | 10.4                                                                                | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp Delay(d),s/veh         | 85.6                                                                              | 59.6                                                                              | 63.6                                                                              | 98.5                                                                              | 16.1                                                                              | 16.1                                                                              | 57.3                                                                               | 0.0                                                                                 | 61.4                                                                                | 106.7                                                                               | 0.0                                                                                 | 0.0                                                                                 |
| LnGrp LOS                    | F                                                                                 | E                                                                                 | E                                                                                 | F                                                                                 | B                                                                                 | B                                                                                 | E                                                                                  |                                                                                     | E                                                                                   | F                                                                                   |                                                                                     |                                                                                     |
| Approach Vol, veh/h          | 2040                                                                              |                                                                                   |                                                                                   |                                                                                   | 1432                                                                              |                                                                                   |                                                                                    |                                                                                     | 264                                                                                 |                                                                                     | 192                                                                                 |                                                                                     |
| Approach Delay, s/veh        | 63.2                                                                              |                                                                                   |                                                                                   |                                                                                   | 32.8                                                                              |                                                                                   |                                                                                    |                                                                                     | 60.4                                                                                |                                                                                     | 106.7                                                                               |                                                                                     |
| Approach LOS                 | E                                                                                 |                                                                                   |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    |                                                                                     | E                                                                                   |                                                                                     | F                                                                                   |                                                                                     |
| Timer                        | 1                                                                                 | 2                                                                                 | 3                                                                                 | 4                                                                                 | 5                                                                                 | 6                                                                                 | 7                                                                                  | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Assigned Phs                 | 1                                                                                 | 2                                                                                 |                                                                                   | 4                                                                                 | 5                                                                                 | 6                                                                                 |                                                                                    | 8                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Phs Duration (G+Y+Rc), s     | 30.0                                                                              | 87.2                                                                              |                                                                                   | 32.8                                                                              | 16.9                                                                              | 100.3                                                                             |                                                                                    | 32.8                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Change Period (Y+Rc), s      | 4.0                                                                               | 7.0                                                                               |                                                                                   | 4.6                                                                               | 4.0                                                                               | * 7                                                                               |                                                                                    | * 4.6                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Green Setting (Gmax), s  | 26.0                                                                              | 80.2                                                                              |                                                                                   | 28.2                                                                              | 19.0                                                                              | * 88                                                                              |                                                                                    | * 29                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Max Q Clear Time (g_c+I1), s | 26.3                                                                              | 82.2                                                                              |                                                                                   | 30.2                                                                              | 12.8                                                                              | 28.4                                                                              |                                                                                    | 19.2                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Green Ext Time (p_c), s      | 0.0                                                                               | 0.0                                                                               |                                                                                   | 0.0                                                                               | 0.1                                                                               | 41.9                                                                              |                                                                                    | 1.7                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 Ctrl Delay          | 54.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2010 LOS                 | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Notes                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |