

# DEPARTMENT OF PUBLIC WORKS

FLOOD CONTROL • LAND DEVELOPMENT & CONSTRUCTION • OPERATIONS  
SOLID WASTE MANAGEMENT • SURVEYOR • TRANSPORTATION



COUNTY OF SAN BERNARDINO

825 East Third Street • San Bernardino, CA 92415-0835 • (909) 387-8104  
Fax (909) 387-7809

GERRY NEWCOMBE  
Director of Public Works

May 29, 2012

**RECEIVED**

**MAY 31 2012**

San Bernardino Association of Governments  
Attn: Steve Smith  
1170 W. 3<sup>rd</sup> Street - 2<sup>nd</sup> Floor  
San Bernardino, CA 92410-1715

**SAN BERNARDINO  
ASSOCIATED GOVTS**

## RE: SAN BERNARDINO COUNTY CMP ANNUAL LEVELS OF SERVICE REPORT 2012

Dear Steve:

The San Bernardino County Public Works Department, as part of the monitoring program for the San Bernardino County Congestion Management Program (CMP), is submitting the annual Levels of Service report for the year 2012. Delay and LOS shown below is the average intersection delay for Signalized Intersections and the worst minor movement for Stop Control Intersections.

| <b>INTERSECCION</b>                      | <b>PEAK HR.</b> | <b>LOS</b> | <b>DELAY (SEC)</b> |
|--|-----------------|------------|--------------------|
| <b>Alabama St @ San Bernardino Ave</b>   | A.M.            | C          | 27                 |
| Signalized                               | P.M.            | C          | 34                 |
| <b>Cedar Ave @ Bloomington Ave</b>       | A.M.            | B          | 13                 |
| Signalized                               | P.M.            | B          | 11                 |
| <b>Cedar Ave @ San Bernardino Ave</b>    | A.M.            | C          | 23                 |
| Signalized                               | P.M.            | C          | 24                 |
| <b>Cherry Ave @ Arrow Rt.</b>            | A.M.            | C          | 26                 |
| Signalized                               | P.M.            | C          | 27                 |
| <b>Etiwanda Ave @ San Bernardino Ave</b> | A.M.            | C          | 31                 |
| Signalized                               | P.M.            | C          | 32                 |
| <b>SR38 @ Garnet Street</b>              | A.M.            | C          | 20.7               |
| Stop Control                             | P.M.            | D          | 33.5               |
| <b>SR38 @ Bryant Street</b>              | A.M.            | C          | 21.6               |
| Stop Control                             | P.M.            | C          | 15.2               |
| <b>Central Ave @ Mission Blvd</b>        | A.M.            | C          | 26                 |
| Signalized                               | P.M.            | C          | 28                 |

GREGORY C. DEVEREAUX  
Chief Executive Officer

Board of Supervisors  
BRAD MITZELFELT ..... First District  
JANICE RUTHERFORD ..... Second District  
JOSIE GONZALES ..... Fifth District  
NEIL DERRY ..... Third District  
GARY C. OVITT ..... Fourth District

Attached please find copies to the ground counts and Webster and HCS analysis worksheets for the aforementioned intersections.

If you have any questions, please call me at (909)387-8239.

Sincerely,

A handwritten signature in black ink, appearing to read 'Ed Petre', written in a cursive style.

**ED PETRE, P.E.**  
Traffic Division

EP/sr

Cc: Reading File

**WEBSTER**  
**Webster Based Signal Timing Evaluation Routine**  
For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

**Alabama Ave at San Bernardino Ave AM**

**Alabama Ave at San Bernardino**

**County of San Bernardino**

**AM Peak Hour**

Parameter Values (using default set 'SANBAG (Existing)')

| Parameter                     | Other | Default | Min. Time Parameter         | Other  | Default | Sat. Flow Parameter           | Other | Default |
|-------------------------------|-------|---------|-----------------------------|--------|---------|-------------------------------|-------|---------|
| Duration of Peak Period (min) |       | 15      | Min. Time (Left Turns, sec) |        | 10      | Sat Flow (1 Left lane, vphg)  | 1700  | 1800    |
| Lost Time (sec)               |       | 2       | Min/Ped Time (Thrus, sec)   | Varies | Varies  | Sat Flow (2 Left lanes, vphg) | 3200  | 3500    |
| Vehicle Length (feet)         |       | 20      |                             |        |         | Sat Flow (1 Thru lane, vphg)  | 1800  | 1900    |
|                               |       |         |                             |        |         | Sat Flow (1 Right lane, vphg) |       | 1800    |

Input Values

| Movement Times                | Eastbound |      |      | Westbound |      |      | Northbound |      |      | Southbound |      |      |
|-------------------------------|-----------|------|------|-----------|------|------|------------|------|------|------------|------|------|
|                               | L         | T    | R    | *L*       | *T*  | R    | *L*        | T    | R    | L          | *T*  | R    |
| Movement 1: 16 secs           | X         |      |      | X         |      |      |            |      |      |            |      |      |
| Movement 2: 28 secs           |           | X    | X    |           | X    | X    |            |      |      |            |      |      |
| Movement 3: 10 secs           |           |      |      |           |      |      | X          |      |      | X          |      |      |
| Movement 4: 28 secs           |           |      |      |           |      |      |            | X    | X    |            | X    | X    |
| Movement 5: 0 secs            |           |      |      |           |      |      |            |      |      |            |      |      |
| Movement 6: 0 secs            |           |      |      |           |      |      |            |      |      |            |      |      |
| # of Lanes (#, S, P)          | 1         | 1    | 1    | 1         | 2    | 1    | 1          | 2    | S    | 1          | 2    | 1    |
| Unadjusted Volume             | 30        | 72   | 18   | 155       | 399  | 127  | 77         | 149  | 58   | 46         | 273  | 105  |
| Peak Hour Factor (PHF)        | 1.00      | 1.00 | 1.00 | 0.79      | 0.79 | 0.79 | 0.79       | 0.79 | 0.79 | 0.87       | 0.87 | 0.87 |
| Min/Ped Time Override (sec)   | 10        | 28   | 28   | 10        | 28   | 28   | 10         | 28   | 28   | 10         | 28   | 28   |
| Progression Adj. Factor (PAF) | 1.00      | 1.00 | 1.00 | 1.00      | 1.00 | 1.00 | 1.00       | 1.00 | -    | 1.00       | 1.00 | 1.00 |

Output

|                              | ***  |      |      | ***  |      |      | ***  |      |      | ***  |      |      |
|------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Peak Hour Volume (vph)       | 30   | 72   | 18   | 196  | 505  | 161  | 97   | 189  | 73   | 53   | 314  | 121  |
| Saturation Flow (vph)        | 1700 | 1800 | 1800 | 1700 | 3600 | 1800 | 1700 | 3600 | Shrd | 1700 | 3600 | 1800 |
| X or Volume/Capacity         | 0.10 | 0.13 | 0.03 | 0.68 | 0.44 | 0.28 | 0.58 | 0.23 | -    | 0.32 | 0.28 | 0.21 |
| Effective Green (sec)        | 14   | 26   | 26   | 14   | 26   | 26   | 8    | 26   | -    | 8    | 26   | 26   |
| Split Time (sec)             | 16   | 28   | 28   | 16   | 28   | 28   | 10   | 28   | -    | 10   | 28   | 28   |
| Min. Time or Ped. Time (sec) | 10   | 28   | 28   | 10   | 28   | 28   | 10   | 28   | -    | 10   | 28   | 28   |
| Delay - 15 min pk (sec/veh)  | 29   | 20   | 19   | 44   | 23   | 22   | 60   | 21   | -    | 39   | 22   | 21   |
| Level of Service (LOS)       | C    | C+   | B    | D    | C+   | C+   | D    | C+   | -    | D+   | C+   | C+   |
| Average 'Q' (veh/in)         | 1    | 1    | 1    | 4    | 4    | 3    | 2    | 2    | -    | 1    | 2    | 2    |
| Design 'Q'-ft/in (1.5*Qavg)  | 40   | 40   | 40   | 120  | 120  | 100  | 60   | 60   | -    | 40   | 60   | 60   |
| Do Vehicles Clear?           | YES  | -    | YES  | YES  | YES  |

Summary of Results

|  |   |
|--|---|
| <b>Whole Intersection</b><br>Weighted Average Delay (seconds) = 27<br>Level of Service - LOS = C | <b>Critical Movements</b><br>Weighted Average Delay (seconds) = 29<br>Level of Service - LOS = C<br>Capacity Utilization - ICU/TCU = 0.44 |
| <b>Required Cycle Length is 82 sec</b><br>Min./Ped. Times Satisfied                              |   |

**WEBSTER**  
**Webster Based Signal Timing Evaluation Routine**  
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

**Alabama Ave at San Bernardino Ave PM**

**Alabama Ave at San Bernardino**

**County of San Bernardino**

**PM Peak Hour**

Parameter Values (using default set 'SANBAG (Existing)')

| Parameter                     | Other | Default | Min. Time Parameter         | Other  | Default | Sat. Flow Parameter           | Other | Default |
|-------------------------------|-------|---------|-----------------------------|--------|---------|-------------------------------|-------|---------|
| Duration of Peak Period (min) |       | 15      | Min. Time (Left Turns, sec) |        | 10      | Sat Flow (1 Left lane, vphg)  | 1700  | 1800    |
| Lost Time (sec)               |       | 2       | Min/Ped Time (Thrus, sec)   | Varies | Varies  | Sat Flow (2 Left lanes, vphg) | 3200  | 3500    |
| Vehicle Length (feet)         |       | 20      |                             |        |         | Sat Flow (1 Thru lane, vphg)  | 1800  | 1900    |
|                               |       |         |                             |        |         | Sat Flow (1 Right lane, vphg) |       | 1800    |

Input Values

| Movement Times                | Eastbound |      |      | Westbound |      |      | Northbound |      |      | Southbound |      |      |
|-------------------------------|-----------|------|------|-----------|------|------|------------|------|------|------------|------|------|
|                               | *L*       | *T*  | R    | L         | T    | R    | L          | *T*  | R    | *L*        | T    | R    |
| Movement 1: 15 secs           | X         |      |      | X         |      |      |            |      |      |            |      |      |
| Movement 2: 36 secs           |           | X    | X    |           | X    | X    |            |      |      |            |      |      |
| Movement 3: 10 secs           |           |      |      |           |      |      | X          |      |      | X          |      |      |
| Movement 4: 28 secs           |           |      |      |           |      |      |            | X    | X    |            | X    | X    |
| Movement 5: 0 secs            |           |      |      |           |      |      |            |      |      |            |      |      |
| Movement 6: 0 secs            |           |      |      |           |      |      |            |      |      |            |      |      |
| # of Lanes (#, S, P)          | 1         | 1    | 1    | 1         | 2    | 1    | 1          | 2    | S    | 1          | 2    | 1    |
| Unadjusted Volume             | 149       | 434  | 89   | 147       | 149  | 64   | 24         | 369  | 196  | 68         | 349  | 47   |
| Peak Hour Factor (PHF)        | 0.76      | 0.76 | 0.76 | 0.90      | 0.90 | 0.90 | 0.88       | 0.88 | 0.88 | 0.90       | 0.90 | 0.90 |
| Min/Ped Time Override (sec)   | 10        | 28   | 28   | 10        | 28   | 28   | 10         | 28   | 28   | 10         | 28   | 28   |
| Progression Adj. Factor (PAF) | 1.00      | 1.00 | 1.00 | 1.00      | 1.00 | 1.00 | 1.00       | 1.00 | -    | 1.00       | 1.00 | 1.00 |

Output

|                              | ***  | ***  |      |      |      |      | ***  | ***  |      | ***  |      |      |
|------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Peak Hour Volume (vph)       | 196  | 571  | 117  | 163  | 166  | 71   | 27   | 419  | 223  | 76   | 388  | 52   |
| Saturation Flow (vph)        | 1700 | 1800 | 1800 | 1700 | 3600 | 1800 | 1700 | 3600 | Shrd | 1700 | 3600 | 1800 |
| X or Volume/Capacity         | 0.79 | 0.83 | 0.17 | 0.66 | 0.12 | 0.10 | 0.18 | 0.61 | -    | 0.50 | 0.37 | 0.10 |
| Effective Green (sec)        | 13   | 34   | 34   | 13   | 34   | 34   | 8    | 26   | -    | 8    | 26   | 26   |
| Split Time (sec)             | 15   | 36   | 36   | 15   | 36   | 36   | 10   | 28   | -    | 10   | 28   | 28   |
| Min. Time or Ped. Time (sec) | 10   | 28   | 28   | 10   | 28   | 28   | 10   | 28   | -    | 10   | 28   | 28   |
| Delay - 15 min pk (sec/veh)  | 59   | 36   | 19   | 49   | 18   | 18   | 40   | 30   | -    | 50   | 26   | 23   |
| Level of Service (LOS)       | E+   | D+   | B    | D    | B    | B    | D+   | C    | -    | D    | C    | C+   |
| Average 'Q' (veh/in)         | 4    | 9    | 2    | 4    | 1    | 1    | 1    | 6    | -    | 2    | 3    | 1    |
| Design 'Q'-ft/in (1.5*Qavg)  | 120  | 280  | 60   | 120  | 40   | 40   | 40   | 180  | -    | 60   | 100  | 40   |
| Do Vehicles Clear?           | YES  | -    | YES  | YES  | YES  |

Summary of Results

|   |  |
|---|--|
| <b>Whole Intersection</b><br>Weighted Average Delay (seconds) = 34<br>Level of Service - LOS = C- | <b>Critical Movements</b><br>Weighted Average Delay (seconds) = 38<br>Level of Service - LOS = D+<br>Capacity Utilization - ICU/TCU = 0.72 |
| Required Cycle Length is 89 sec<br>Min./Ped. Times Satisfied                                      |  |

**AM**

**Alabama at San Bernardino**

|                        | EB        |           |           | WB         |            |            | NB        |            |           | SB         |            |           | Total |     |
|------------------------|-----------|-----------|-----------|------------|------------|------------|-----------|------------|-----------|------------|------------|-----------|-------|-----|
|                        | Rt        | Th        | Lt        | Rt         | Th         | Lt         | Rt        | Th         | Lt        | Rt         | Th         | Lt        |       |     |
| 7:00                   |           | 5         | 23        | 12         | 53         | 71         | 25        | 9          | 32        | 21         | 11         | 45        | 6     | 313 |
| 7:15                   |           | 3         | 13        | 7          | 41         | 89         | 27        | 8          | 32        | 14         | 41         | 65        | 14    | 354 |
| 7:30                   |           | 5         | 16        | 3          | 12         | 105        | 37        | 18         | 32        | 20         | 22         | 81        | 8     | 359 |
| 7:45                   |           | 4         | 16        | 6          | 15         | 127        | 64        | 18         | 43        | 18         | 29         | 69        | 14    | 423 |
| <b>Total Veh+Truck</b> | <b>17</b> | <b>68</b> | <b>28</b> | <b>121</b> | <b>392</b> | <b>153</b> | <b>53</b> | <b>139</b> | <b>73</b> | <b>103</b> | <b>260</b> | <b>42</b> |       |     |
| <b>Veh Only</b>        | <b>16</b> | <b>64</b> | <b>26</b> | <b>116</b> | <b>386</b> | <b>150</b> | <b>48</b> | <b>133</b> | <b>68</b> | <b>102</b> | <b>247</b> | <b>39</b> |       |     |
| <b>Trucks</b>          | 1.019231  |           |           | 0.791262   |            |            | 0.787975  |            |           | 0.866071   |            |           |       |     |

|         |   |   |   |     |     |     |     |    |   |   |    |   |
|---------|---|---|---|-----|-----|-----|-----|----|---|---|----|---|
| 2 axle  | 0 | 2 | 0 | 1   | 3   | 3   | 3   | 0  | 2 | 0 | 4  | 0 |
| PCI     | 0 | 3 | 0 | 1.5 | 4.5 | 4.5 | 4.5 | 0  | 3 | 0 | 6  | 0 |
| 3 axle  | 1 | 1 | 2 | 3   | 1   | 0   | 1   | 2  | 3 | 0 | 7  | 2 |
| PCI     | 2 | 2 | 4 | 6   | 2   | 0   | 2   | 4  | 6 | 0 | 14 | 4 |
| 4+ axle | 0 | 1 | 0 | 1   | 2   | 0   | 1   | 4  | 0 | 1 | 2  | 1 |
| PCI     | 0 | 3 | 0 | 3   | 6   | 0   | 3   | 12 | 0 | 3 | 6  | 3 |

|                    |           |           |           |            |            |            |           |            |           |            |            |           |
|--------------------|-----------|-----------|-----------|------------|------------|------------|-----------|------------|-----------|------------|------------|-----------|
| <b>Total (PCI)</b> | <b>18</b> | <b>72</b> | <b>30</b> | <b>127</b> | <b>399</b> | <b>155</b> | <b>58</b> | <b>149</b> | <b>77</b> | <b>105</b> | <b>273</b> | <b>46</b> |
|--------------------|-----------|-----------|-----------|------------|------------|------------|-----------|------------|-----------|------------|------------|-----------|

**PM**

**Alabama at San Bernardino**

|                        | EB        |            |            | WB        |            |            | NB         |            |           | SB        |            |           | Total |     |
|------------------------|-----------|------------|------------|-----------|------------|------------|------------|------------|-----------|-----------|------------|-----------|-------|-----|
|                        | Rt        | Th         | Lt         | Rt        | Th         | Lt         | Rt         | Th         | Lt        | Rt        | Th         | Lt        |       |     |
| 4:45                   |           | 17         | 82         | 31        | 10         | 31         | 47         | 50         | 81        | 5         | 13         | 93        | 14    | 474 |
| 5:00                   |           | 19         | 131        | 36        | 9          | 35         | 37         | 44         | 97        | 3         | 9          | 72        | 13    | 505 |
| 5:15                   |           | 27         | 148        | 41        | 17         | 45         | 28         | 47         | 108       | 6         | 13         | 83        | 23    | 586 |
| 5:30                   |           | 23         | 65         | 41        | 14         | 31         | 32         | 54         | 73        | 9         | 11         | 83        | 15    | 451 |
| <b>Total Veh+Truck</b> | <b>86</b> | <b>426</b> | <b>149</b> | <b>50</b> | <b>142</b> | <b>144</b> | <b>195</b> | <b>359</b> | <b>23</b> | <b>46</b> | <b>331</b> | <b>65</b> |       |     |
| <b>Veh Only</b>        | <b>84</b> | <b>422</b> | <b>149</b> | <b>43</b> | <b>138</b> | <b>142</b> | <b>193</b> | <b>354</b> | <b>22</b> | <b>45</b> | <b>322</b> | <b>63</b> |       |     |
| <b>Trucks</b>          | 0.758102  |            |            | 0.897222  |            |            | 0.88354    |            |           | 0.903361  |            |           |       |     |

|         |   |    |   |    |   |     |   |    |   |   |    |     |
|---------|---|----|---|----|---|-----|---|----|---|---|----|-----|
| 2 axle  | 0 | 0  | 0 | 0  | 0 | 1   | 2 | 0  | 0 | 0 | 0  | 1   |
| PCI     | 0 | 0  | 0 | 0  | 0 | 1.5 | 3 | 0  | 0 | 0 | 0  | 1.5 |
| 3 axle  | 1 | 0  | 0 | 0  | 1 | 0   | 0 | 0  | 1 | 1 | 0  | 0   |
| PCI     | 2 | 0  | 0 | 0  | 2 | 0   | 0 | 0  | 2 | 2 | 0  | 0   |
| 4+ axle | 1 | 4  | 0 | 7  | 3 | 1   | 0 | 5  | 0 | 0 | 9  | 1   |
| PCI     | 3 | 12 | 0 | 21 | 9 | 3   | 0 | 15 | 0 | 0 | 27 | 3   |

|                    |           |            |            |           |            |            |            |            |           |           |            |           |
|--------------------|-----------|------------|------------|-----------|------------|------------|------------|------------|-----------|-----------|------------|-----------|
| <b>Total (PCI)</b> | <b>89</b> | <b>434</b> | <b>149</b> | <b>64</b> | <b>149</b> | <b>147</b> | <b>196</b> | <b>369</b> | <b>24</b> | <b>47</b> | <b>349</b> | <b>68</b> |
|--------------------|-----------|------------|------------|-----------|------------|------------|------------|------------|-----------|-----------|------------|-----------|

SAN BERNARDINO AVE. @ ALABAMA ST.

SAN BERNARDINO COUNTY

PUBLIC WORKS  
TRAFFIC DIVISION

File Name : SB@ALABAMA120424

Site Code : 00000000

Start Date : 04/24/2012

Page No : 1

Groups Printed- Unshifted

| Start Time  | ALABAMA ST. Northbound |      |      |      | ALABAMA ST. Southbound |      |      |      | SAN BERNARDINO AVE. Eastbound |      |      |      | SAN BERNARDINO AVE. Westbound |      |      |      | Int. Total |      |
|-------------|------------------------|------|------|------|------------------------|------|------|------|-------------------------------|------|------|------|-------------------------------|------|------|------|------------|------|
|             | Right                  | Thru | Left | Peds | Right                  | Thru | Left | Peds | Right                         | Thru | Left | Peds | Right                         | Thru | Left | Peds |            |      |
| Factor      | 1.0                    | 1.0  | 1.0  | 1.0  | 1.0                    | 1.0  | 1.0  | 1.0  | 1.0                           | 1.0  | 1.0  | 1.0  | 1.0                           | 1.0  | 1.0  | 1.0  | 1.0        |      |
| 07:00 AM    | 9                      | 32   | 21   | 0    | 11                     | 45   | 6    | 0    | 5                             | 23   | 12   | 0    | 53                            | 71   | 25   | 1    |            | 314  |
| 07:15 AM    | 8                      | 32   | 14   | 0    | 41                     | 65   | 14   | 0    | 3                             | 13   | 7    | 0    | 41                            | 89   | 27   | 0    |            | 354  |
| 07:30 AM    | 18                     | 32   | 20   | 0    | 22                     | 81   | 8    | 0    | 5                             | 16   | 3    | 0    | 12                            | 105  | 37   | 0    |            | 359  |
| 07:45 AM    | 18                     | 43   | 18   | 0    | 29                     | 69   | 14   | 0    | 4                             | 16   | 6    | 0    | 15                            | 127  | 64   | 0    |            | 423  |
| Total       | 53                     | 139  | 73   | 0    | 103                    | 260  | 42   | 0    | 17                            | 68   | 28   | 0    | 121                           | 392  | 153  | 1    |            | 1450 |
| 08:00 AM    | 13                     | 39   | 13   | 0    | 25                     | 47   | 3    | 0    | 8                             | 31   | 8    | 0    | 6                             | 83   | 28   | 0    |            | 304  |
| 08:15 AM    | 11                     | 40   | 9    | 0    | 11                     | 31   | 5    | 0    | 8                             | 24   | 9    | 0    | 7                             | 87   | 27   | 0    |            | 269  |
| 08:30 AM    | 10                     | 24   | 3    | 0    | 13                     | 53   | 3    | 0    | 6                             | 20   | 11   | 2    | 10                            | 61   | 47   | 0    |            | 263  |
| 08:45 AM    | 14                     | 29   | 7    | 0    | 17                     | 60   | 8    | 0    | 9                             | 18   | 4    | 0    | 9                             | 43   | 48   | 0    |            | 266  |
| Total       | 48                     | 132  | 32   | 0    | 66                     | 191  | 19   | 0    | 31                            | 93   | 32   | 2    | 32                            | 274  | 150  | 0    |            | 1102 |
| 04:00 PM    | 48                     | 64   | 12   | 2    | 13                     | 65   | 21   | 0    | 13                            | 53   | 19   | 0    | 5                             | 34   | 29   | 0    |            | 378  |
| 04:15 PM    | 47                     | 76   | 5    | 0    | 12                     | 73   | 10   | 0    | 19                            | 104  | 18   | 0    | 9                             | 28   | 27   | 0    |            | 428  |
| 04:30 PM    | 47                     | 81   | 6    | 0    | 11                     | 82   | 21   | 0    | 13                            | 82   | 31   | 0    | 6                             | 29   | 34   | 0    |            | 443  |
| 04:45 PM    | 50                     | 81   | 5    | 0    | 13                     | 93   | 14   | 0    | 17                            | 82   | 31   | 0    | 10                            | 31   | 47   | 0    |            | 474  |
| Total       | 192                    | 302  | 28   | 2    | 49                     | 313  | 66   | 0    | 62                            | 321  | 99   | 0    | 30                            | 122  | 137  | 0    |            | 1723 |
| 05:00 PM    | 44                     | 97   | 3    | 3    | 9                      | 72   | 13   | 0    | 19                            | 131  | 36   | 0    | 9                             | 35   | 37   | 0    |            | 508  |
| 05:15 PM    | 47                     | 108  | 6    | 0    | 13                     | 83   | 23   | 0    | 27                            | 148  | 41   | 0    | 17                            | 45   | 28   | 0    |            | 586  |
| 05:30 PM    | 54                     | 73   | 9    | 0    | 11                     | 83   | 15   | 0    | 23                            | 65   | 41   | 0    | 14                            | 31   | 32   | 0    |            | 451  |
| 05:45 PM    | 42                     | 72   | 7    | 0    | 11                     | 58   | 10   | 0    | 17                            | 72   | 25   | 1    | 9                             | 26   | 31   | 0    |            | 381  |
| Total       | 187                    | 350  | 25   | 3    | 44                     | 296  | 61   | 0    | 86                            | 416  | 143  | 1    | 49                            | 137  | 128  | 0    |            | 1926 |
| Grand Total | 480                    | 923  | 158  | 5    | 262                    | 1060 | 188  | 0    | 196                           | 898  | 302  | 3    | 232                           | 925  | 568  | 1    |            | 6201 |
| Apprch %    | 30.7                   | 58.9 | 10.1 | 0.3  | 17.4                   | 70.2 | 12.5 | 0.0  | 14.0                          | 64.2 | 21.6 | 0.2  | 13.4                          | 53.6 | 32.9 | 0.1  |            |      |
| Total %     | 7.7                    | 14.9 | 2.5  | 0.1  | 4.2                    | 17.1 | 3.0  | 0.0  | 3.2                           | 14.5 | 4.9  | 0.0  | 3.7                           | 14.9 | 9.2  | 0.0  |            |      |

| Start Time  | ALABAMA ST. Northbound |      |      |       |            | ALABAMA ST. Southbound |      |      |       |            | SAN BERNARDINO AVE. Eastbound |      |      |       |            | SAN BERNARDINO AVE. Westbound |      |      |       |            | Int. Total |
|---|------------------------|------|------|-------|------------|------------------------|------|------|-------|------------|-------------------------------|------|------|-------|------------|-------------------------------|------|------|-------|------------|------------|
|   | Rig ht                 | Thru | Left | Ped s | App. Total | Rig ht                 | Thru | Left | Ped s | App. Total | Rig ht                        | Thru | Left | Ped s | App. Total | Rig ht                        | Thru | Left | Ped s | App. Total |            |
| Peak Hour From 07:00 AM to 12:30 PM - Peak 1 of 1 |                        |      |      |       |            |                        |      |      |       |            |                               |      |      |       |            |                               |      |      |       |            |            |
| Intersection                                      | 07:00 AM               |      |      |       |            |                        |      |      |       |            |                               |      |      |       |            |                               |      |      |       |            |            |
| Volume  | 53                     | 139  | 73   | 0     | 265        | 103                    | 260  | 42   | 0     | 405        | 17                            | 68   | 28   | 0     | 113        | 121                           | 392  | 153  | 1     | 667        | 1450       |
| Percent   | 20.0                   | 52.5 | 27.5 | 0.0   |            | 25.4                   | 64.2 | 10.4 | 0.0   |            | 15.0                          | 60.2 | 24.8 | 0.0   |            | 18.1                          | 58.8 | 22.9 | 0.1   |            |            |
| 07:45   | 18                     | 43   | 18   | 0     | 79         | 29                     | 69   | 14   | 0     | 112        | 4                             | 16   | 6    | 0     | 26         | 15                            | 127  | 64   | 0     | 206        | 423        |
| Volume  |                        |      |      |       |            |                        |      |      |       |            |                               |      |      |       |            |                               |      |      |       |            |            |
| Peak Factor                                       | 0.839                  |      |      |       |            | 0.844                  |      |      |       |            | 0.706                         |      |      |       |            | 0.809                         |      |      |       |            | 0.857      |
| High Int.   | 07:45 AM               |      |      |       |            | 07:15 AM               |      |      |       |            | 07:00 AM                      |      |      |       |            | 07:45 AM                      |      |      |       |            |            |
| Volume  | 18                     | 43   | 18   | 0     | 79         | 41                     | 65   | 14   | 0     | 120        | 5                             | 23   | 12   | 0     | 40         | 15                            | 127  | 64   | 0     | 206        |            |
| Peak Factor                                       | 0.839                  |      |      |       |            | 0.844                  |      |      |       |            | 0.706                         |      |      |       |            | 0.809                         |      |      |       |            |            |
| Peak Hour From 12:45 PM to 05:45 PM - Peak 1 of 1 |                        |      |      |       |            |                        |      |      |       |            |                               |      |      |       |            |                               |      |      |       |            |            |
| Intersection                                      | 04:45 PM               |      |      |       |            |                        |      |      |       |            |                               |      |      |       |            |                               |      |      |       |            |            |
| Volume  | 195                    | 359  | 23   | 3     | 580        | 46                     | 331  | 65   | 0     | 442        | 86                            | 426  | 149  | 0     | 661        | 50                            | 142  | 144  | 0     | 336        | 2019       |
| Percent   | 33.6                   | 61.9 | 4.0  | 0.5   |            | 10.4                   | 74.9 | 14.7 | 0.0   |            | 13.0                          | 64.4 | 22.5 | 0.0   |            | 14.9                          | 42.3 | 42.9 | 0.0   |            |            |
| 05:15   | 47                     | 108  | 6    | 0     | 161        | 13                     | 83   | 23   | 0     | 119        | 27                            | 148  | 41   | 0     | 216        | 17                            | 45   | 28   | 0     | 90         | 586        |
| Volume  |                        |      |      |       |            |                        |      |      |       |            |                               |      |      |       |            |                               |      |      |       |            |            |
| Peak Factor                                       | 0.901                  |      |      |       |            | 0.921                  |      |      |       |            | 0.765                         |      |      |       |            | 0.933                         |      |      |       |            | 0.861      |
| High Int.   | 05:15 PM               |      |      |       |            | 04:45 PM               |      |      |       |            | 05:15 PM                      |      |      |       |            | 05:15 PM                      |      |      |       |            |            |
| Volume  | 47                     | 108  | 6    | 0     | 161        | 13                     | 93   | 14   | 0     | 120        | 27                            | 148  | 41   | 0     | 216        | 17                            | 45   | 28   | 0     | 90         |            |
| Peak Factor                                       | 0.901                  |      |      |       |            | 0.921                  |      |      |       |            | 0.765                         |      |      |       |            | 0.933                         |      |      |       |            |            |

SAN BERNARDINO COUNTY  
 Department Of Public works  
 Traffic Division

COMMERCIAL TRUCK COUNT

LOCATION: Alabama St. & San Bernardino Ave.  
 Alabama St.

COUNT BY: Eloy Ruvalcaba  
 DATE: 4/24/2012  
 San Bernardino Ave.

| TIME         | TYPE     | NB RT | NB THRU | NB LT | SB RT | SB THRU | SB LT | EB RT | EB THRU | EB LT | WB RT | WB THRU | WB LT |
|--------------|----------|-------|---------|-------|-------|---------|-------|-------|---------|-------|-------|---------|-------|
| 7:00-7:15 AM | 2-AXLE   |       |         | 2     |       | 2       |       |       | 1       |       |       | 1       | 1     |
|              | 3-AXLE   | 1     |         | 1     |       | 2       | 1     | 1     | 1       | 1     |       |         |       |
|              | 4-AXLE   |       |         |       |       |         |       |       |         |       |       |         |       |
|              | 5-AXLE + |       | 1       |       |       | 1       |       |       |         |       |       |         |       |
| 7:15-7:30 AM | 2-AXLE   | 2     |         |       |       |         |       |       | 1       |       |       |         |       |
|              | 3-AXLE   |       |         |       |       | 2       |       |       |         |       | 1     | 1       |       |
|              | 4-AXLE   |       |         |       |       |         |       |       |         |       |       |         |       |
|              | 5-AXLE + | 1     |         |       | 1     | 1       | 1     |       |         |       | 1     |         |       |
| 7:30-7:45 AM | 2-AXLE   |       |         |       |       |         |       |       |         |       | 1     |         |       |
|              | 3-AXLE   |       |         | 1     |       | 1       | 1     |       |         | 1     |       |         |       |
|              | 4-AXLE   |       |         |       |       |         |       |       |         |       |       |         |       |
|              | 5-AXLE + |       | 1       |       |       |         | 1     |       | 1       |       |       |         |       |
| 7:45-8:00 AM | 2-AXLE   | 1     |         |       |       | 2       |       |       |         |       |       | 2       | 2     |
|              | 3-AXLE   |       | 2       | 1     |       | 2       |       |       |         |       | 2     |         |       |
|              | 4-AXLE   |       |         |       |       |         |       |       |         |       |       |         |       |
|              | 5-AXLE + |       | 2       |       |       |         |       |       |         |       |       | 2       |       |

|              |          |   |   |   |   |   |   |   |   |   |   |   |   |
|--------------|----------|---|---|---|---|---|---|---|---|---|---|---|---|
| 8:00-8:15 AM | 2-AXLE   |   | 6 | 1 |   |   |   |   |   |   |   | 3 | 1 |
|              | 3-AXLE   |   | 4 |   | 1 |   |   |   |   |   |   |   |   |
|              | 4-AXLE   |   |   |   |   |   |   |   |   |   |   |   |   |
|              | 5-AXLE + |   | 2 | 1 | 1 | 2 | 1 |   |   |   |   |   |   |
| 8:15-8:30 AM | 2-AXLE   | 1 | 8 | 2 |   | 2 |   |   |   |   |   | 1 |   |
|              | 3-AXLE   |   |   |   |   |   |   |   |   | 1 |   |   |   |
|              | 4-AXLE   |   |   |   | 1 |   |   |   |   |   |   | 1 |   |
|              | 5-AXLE + |   | 1 |   |   |   | 1 |   | 1 |   | 1 | 1 |   |
| 8:30-8:45 AM | 2-AXLE   |   | 1 | 1 |   |   |   |   |   |   | 1 |   |   |
|              | 3-AXLE   |   |   |   |   |   |   | 1 |   | 1 |   | 1 | 2 |
|              | 4-AXLE   |   |   |   | 1 | 3 |   |   |   |   |   |   | 1 |
|              | 5-AXLE + |   | 6 |   |   | 2 |   |   |   |   | 2 | 1 |   |
| 8:45-9:00 AM | 2-AXLE   | 3 | 1 | 1 |   | 1 | 1 |   |   |   | 2 | 2 | 1 |
|              | 3-AXLE   |   |   |   | 2 | 1 | 2 |   | 1 |   | 2 |   |   |
|              | 4-AXLE   |   | 1 |   |   |   |   |   |   |   |   |   |   |
|              | 5-AXLE + |   | 2 |   |   | 3 |   |   |   |   | 1 | 1 | 1 |

| TIME         | TYPE     | NB RT | NB THRU | NB LT | SB RT | SB THRU | SB LT | EB RT | EB THRU | EB LT | WB RT | WB THRU | WB LT |
|--------------|----------|-------|---------|-------|-------|---------|-------|-------|---------|-------|-------|---------|-------|
| 4:00-4:15 PM | 2-AXLE   |       |         |       |       | 3       |       |       |         | 1     |       | 2       | 1     |
|              | 3-AXLE   |       |         | 1     |       | 1       |       |       |         |       |       |         |       |
|              | 4-AXLE   |       |         |       | 1     |         |       |       |         |       |       |         |       |
|              | 5-AXLE + |       | 1       |       |       | 1       |       |       | 4       |       | 3     | 1       |       |
| 4:15-4:30 PM | 2-AXLE   | 1     |         |       |       |         |       |       |         |       |       |         |       |
|              | 3-AXLE   |       | 1       |       |       | 1       |       |       | 1       |       |       |         |       |
|              | 4-AXLE   |       |         |       |       |         |       |       | 1       |       |       |         |       |
|              | 5-AXLE + |       | 2       |       |       | 5       |       | 1     |         |       | 3     | 1       | 1     |
| 4:30-4:45 PM | 2-AXLE   |       |         |       |       |         |       |       | 1       |       |       |         |       |
|              | 3-AXLE   |       |         |       | 1     |         |       |       |         |       |       |         |       |
|              | 4-AXLE   |       |         |       |       |         |       |       |         |       |       |         |       |
|              | 5-AXLE + |       | 2       |       |       | 6       |       |       | 2       |       | 1     | 2       |       |

|              |          |   |   |  |   |   |   |   |   |  |   |   |   |
|--------------|----------|---|---|--|---|---|---|---|---|--|---|---|---|
| 4:45-5:00 PM | 2-AXLE   | 1 |   |  |   |   |   |   |   |  |   |   | 1 |
|              | 3-AXLE   |   |   |  |   |   |   |   |   |  |   | 1 |   |
|              | 4-AXLE   |   |   |  |   |   |   |   |   |  |   |   | 1 |
|              | 5-AXLE + |   | 1 |  |   | 1 |   |   | 2 |  | 1 |   |   |
| 5:00-5:15 PM | 2-AXLE   |   |   |  |   |   |   |   |   |  |   |   |   |
|              | 3-AXLE   |   |   |  | 1 |   |   |   |   |  |   |   |   |
|              | 4-AXLE   |   |   |  |   |   |   |   |   |  |   |   |   |
|              | 5-AXLE + |   | 2 |  |   | 3 |   | 1 | 1 |  | 1 |   |   |
| 5:15-5:30 PM | 2-AXLE   |   |   |  |   |   |   |   |   |  |   |   |   |
|              | 3-AXLE   |   |   |  |   |   |   |   |   |  |   |   |   |
|              | 4-AXLE   |   |   |  |   |   |   |   |   |  |   |   |   |
|              | 5-AXLE + |   | 2 |  |   | 2 | 1 |   | 1 |  | 3 | 3 |   |
| 5:30-5:45 PM | 2-AXLE   | 1 |   |  |   |   | 1 |   |   |  |   |   |   |
|              | 3-AXLE   |   |   |  |   |   |   | 1 |   |  |   |   |   |
|              | 4-AXLE   |   |   |  |   |   |   |   |   |  |   |   |   |
|              | 5-AXLE + |   |   |  |   | 3 |   |   |   |  | 2 |   |   |

|              |          |   |   |   |  |   |  |  |  |  |  |  |   |
|--------------|----------|---|---|---|--|---|--|--|--|--|--|--|---|
| 5:45-6:00 PM | 2-AXLE   | 1 |   |   |  |   |  |  |  |  |  |  | 1 |
|              | 3-AXLE   |   |   | 1 |  |   |  |  |  |  |  |  |   |
|              | 4-AXLE   |   |   |   |  |   |  |  |  |  |  |  |   |
|              | 5-AXLE + |   | 4 |   |  | 2 |  |  |  |  |  |  |   |

**WEBSTER**  
**Webster Based Signal Timing Evaluation Routine**  
For Capacity and Level of Service Analysis Using HCM 2000 Control Delay  
**Cedar Ave at Bloomington Ave AM**

**Cedar Ave at Bloomington Ave**

**County of San Bernardino**

**AM Peak Hour**

Parameter Values (using default set 'SANBAG (Existing)')

| Parameter                     | Other | Default | Min. Time Parameter         | Other  | Default | Sat. Flow Parameter           | Other | Default |
|-------------------------------|-------|---------|-----------------------------|--------|---------|-------------------------------|-------|---------|
| Duration of Peak Period (min) |       | 15      | Min. Time (Left Turns, sec) |        | 10      | Sat Flow (1 Left lane, vphg)  | 1700  | 1800    |
| Lost Time (sec)               |       | 2       | Min/Ped Time (Thrus, sec)   | Varies | Varies  | Sat Flow (2 Left lanes, vphg) | 3200  | 3500    |
| Vehicle Length (feet)         |       | 20      |                             |        |         | Sat Flow (1 Thru lane, vphg)  | 1800  | 1900    |
|                               |       |         |                             |        |         | Sat Flow (1 Right lane, vphg) |       | 1800    |

Input Values

| Movement Times                | Eastbound |   |   | Westbound |   |      | Northbound |      |   | Southbound |      |   |
|-------------------------------|-----------|---|---|-----------|---|------|------------|------|---|------------|------|---|
|                               | L         | T | R | *L*       | T | R    | L          | T    | R | *L*        | *T*  | R |
| Movement 1: 10 secs           |           |   |   | X         |   | X    |            |      |   |            |      |   |
| Movement 2: 10 secs           |           |   |   |           |   |      |            |      |   | X          |      |   |
| Movement 3: 23 secs           |           |   |   |           |   |      |            | X    |   |            | X    |   |
| Movement 4: 0 secs            |           |   |   |           |   |      |            |      |   |            |      |   |
| Movement 5: 0 secs            |           |   |   |           |   |      |            |      |   |            |      |   |
| Movement 6: 0 secs            |           |   |   |           |   |      |            |      |   |            |      |   |
| # of Lanes (#, S, P)          |           |   |   | 2         |   | 1    |            | 2    |   | 1          | 2    |   |
| Unadjusted Volume             |           |   |   | 300       |   | 89   |            | 813  |   | 127        | 1078 |   |
| Peak Hour Factor (PHF)        |           |   |   | 0.75      |   | 0.75 |            | 0.85 |   | 0.89       | 0.89 |   |
| Min/Ped Time Override (sec)   |           |   |   | 10        |   | 28   |            | 22   |   | 10         | 19   |   |
| Progression Adj. Factor (PAF) |           |   |   | 1.00      |   | 1.00 |            | 1.00 |   | 1.00       | 1.00 |   |

Output

|                              | *** |  |  | ***  |  |      | *** |      |  |      |      |  |
|------------------------------|-----|--|--|------|--|------|-----|------|--|------|------|--|
| Peak Hour Volume (vph)       |     |  |  | 400  |  | 119  |     | 956  |  | 143  | 1211 |  |
| Saturation Flow (vph)        |     |  |  | 3200 |  | 1800 |     | 3600 |  | 1700 | 3600 |  |
| X or Volume/Capacity         |     |  |  | 0.67 |  | 0.36 |     | 0.54 |  | 0.45 | 0.69 |  |
| Effective Green (sec)        |     |  |  | 8    |  | 8    |     | 21   |  | 8    | 21   |  |
| Split Time (sec)             |     |  |  | 10   |  | 10   |     | 23   |  | 10   | 23   |  |
| Min. Time or Ped. Time (sec) |     |  |  | 10   |  | 28   |     | 22   |  | 10   | 19   |  |
| Delay - 15 min pk (sec/veh)  |     |  |  | 22   |  | 18   |     | 9    |  | 20   | 11   |  |
| Level of Service (LOS)       |     |  |  | C+   |  | B    |     | A    |  | C+   | B    |  |
| Average 'Q' (veh/ln)         |     |  |  | 2    |  | 1    |     | 3    |  | 1    | 4    |  |
| Design 'Q'-ft/ln (1.5*Qavg)  |     |  |  | 80   |  | 40   |     | 100  |  | 40   | 120  |  |
| Do Vehicles Clear?           |     |  |  | YES  |  | YES  |     | YES  |  | YES  | YES  |  |

Summary of Results

|  |   |
|--|---|
| <b>Whole Intersection</b><br>Weighted Average Delay (seconds) = 13<br>Level of Service - LOS = B | <b>Critical Movements</b><br>Weighted Average Delay (seconds) = 15<br>Level of Service - LOS = B<br>Capacity Utilization - ICU/TCU = 0.63 |
| <b>Required Cycle Length is 43 sec</b><br><b>Min./Ped. Times May Not Be Satisfied</b>            |   |

**WEBSTER**  
**Webster Based Signal Timing Evaluation Routine**  
For Capacity and Level of Service Analysis Using HCM 2000 Control Delay  
**Cedar Ave at Bloomington Ave PM**

**Cedar Ave at Bloomington Ave**

**County of San Bernardino**

**PM Peak Hour**

Parameter Values (using default set 'SANBAG (Existing)')

| Parameter                     | Other | Default | Min. Time Parameter         | Other  | Default | Sat. Flow Parameter           | Other | Default |
|-------------------------------|-------|---------|-----------------------------|--------|---------|-------------------------------|-------|---------|
| Duration of Peak Period (min) |       | 15      | Min. Time (Left Turns, sec) |        | 10      | Sat Flow (1 Left lane, vphg)  | 1700  | 1800    |
| Lost Time (sec)               |       | 2       | Min/Ped Time (Thrus, sec)   | Varies | Varies  | Sat Flow (2 Left lanes, vphg) | 3200  | 3500    |
| Vehicle Length (feet)         |       | 20      |                             |        |         | Sat Flow (1 Thru lane, vphg)  | 1800  | 1900    |
|                               |       |         |                             |        |         | Sat Flow (1 Right lane, vphg) |       | 1800    |

Input Values

| Movement Times                | Eastbound |   |   | Westbound |   |      | Northbound |      |   | Southbound |      |   |
|-------------------------------|-----------|---|---|-----------|---|------|------------|------|---|------------|------|---|
|                               | L         | T | R | *L*       | T | R    | L          | *T*  | R | *L*        | T    | R |
| Movement 1: 10 secs           |           |   |   | X         |   | X    |            |      |   |            |      |   |
| Movement 2: 10 secs           |           |   |   |           |   |      |            |      |   | X          |      |   |
| Movement 3: 23 secs           |           |   |   |           |   |      |            | X    |   |            | X    |   |
| Movement 4: 0 secs            |           |   |   |           |   |      |            |      |   |            |      |   |
| Movement 5: 0 secs            |           |   |   |           |   |      |            |      |   |            |      |   |
| Movement 6: 0 secs            |           |   |   |           |   |      |            |      |   |            |      |   |
| # of Lanes (#, S, P)          |           |   |   | 2         |   | 1    |            | 2    |   | 1          | 2    |   |
| Unadjusted Volume             |           |   |   | 311       |   | 31   |            | 976  |   | 98         | 759  |   |
| Peak Hour Factor (PHF)        |           |   |   | 1.00      |   | 1.00 |            | 0.97 |   | 1.00       | 1.00 |   |
| Min/Ped Time Override (sec)   |           |   |   | 10        |   | 28   |            | 22   |   | 10         | 19   |   |
| Progression Adj. Factor (PAF) |           |   |   | 1.00      |   | 1.00 |            | 1.00 |   | 1.00       | 1.00 |   |

Output

|                              | *** |  |  | ***  |  |      | *** |      |  |      |      |  |
|------------------------------|-----|--|--|------|--|------|-----|------|--|------|------|--|
| Peak Hour Volume (vph)       |     |  |  | 311  |  | 31   |     | 1006 |  | 98   | 759  |  |
| Saturation Flow (vph)        |     |  |  | 3200 |  | 1800 |     | 3600 |  | 1700 | 3600 |  |
| X or Volume/Capacity         |     |  |  | 0.52 |  | 0.09 |     | 0.57 |  | 0.31 | 0.43 |  |
| Effective Green (sec)        |     |  |  | 8    |  | 8    |     | 21   |  | 8    | 21   |  |
| Split Time (sec)             |     |  |  | 10   |  | 10   |     | 23   |  | 10   | 23   |  |
| Min. Time or Ped. Time (sec) |     |  |  | 10   |  | 28   |     | 22   |  | 10   | 19   |  |
| Delay - 15 min pk (sec/veh)  |     |  |  | 18   |  | 15   |     | 9    |  | 18   | 8    |  |
| Level of Service (LOS)       |     |  |  | B    |  | B    |     | A    |  | B    | A    |  |
| Average 'Q' (veh/ln)         |     |  |  | 2    |  | 1    |     | 3    |  | 1    | 2    |  |
| Design 'Q'-ft/ln (1.5*Qavg)  |     |  |  | 60   |  | 40   |     | 100  |  | 40   | 60   |  |
| Do Vehicles Clear?           |     |  |  | YES  |  | YES  |     | YES  |  | YES  | YES  |  |

Summary of Results

|  |   |
|--|---|
| <b>Whole Intersection</b><br>Weighted Average Delay (seconds) = 11<br>Level of Service - LOS = B | <b>Critical Movements</b><br>Weighted Average Delay (seconds) = 12<br>Level of Service - LOS = B<br>Capacity Utilization - ICU/TCU = 0.50 |
| <b>Required Cycle Length Is 43 sec</b><br><b>Min./Ped. Times May Not Be Satisfied</b>            |   |

### PCI CALCULATION.

Intersection:

Cedar Ave. @ Bloomington Ave.

Date:

05/08/2012

**AM**

| Time               | EB       |          |          | WB        |          |            | NB         |            |          | SB       |             |            | Total |
|--------------------|----------|----------|----------|-----------|----------|------------|------------|------------|----------|----------|-------------|------------|-------|
|                    | Rt       | Th       | Lt       | Rt        | Th       | Lt         | Rt         | Th         | Lt       | Rt       | Th          | Lt         |       |
| 7:00               | 0        | 0        | 0        | 16        | 0        | 72         | 64         | 171        | 0        | 0        | 274         | 31         | 628   |
| 7:15               | 0        | 0        | 0        | 33        | 0        | 86         | 80         | 185        | 0        | 0        | 243         | 42         | 669   |
| 7:30               | 0        | 0        | 0        | 30        | 0        | 73         | 56         | 191        | 0        | 0        | 244         | 24         | 618   |
| 7:45               | 0        | 0        | 0        | 5         | 0        | 55         | 52         | 179        | 0        | 0        | 215         | 18         | 524   |
| <b>Total Veh</b>   | <b>0</b> | <b>0</b> | <b>0</b> | <b>84</b> | <b>0</b> | <b>286</b> | <b>252</b> | <b>726</b> | <b>0</b> | <b>0</b> | <b>976</b>  | <b>115</b> |       |
| <b>Car Only</b>    | <b>0</b> | <b>0</b> | <b>0</b> | <b>81</b> | <b>0</b> | <b>277</b> | <b>232</b> | <b>668</b> | <b>0</b> | <b>0</b> | <b>908</b>  | <b>107</b> |       |
| <b>Factor</b>      | 0        |          |          | 0.752101  |          |            | 0.849057   |            |          | 0.890351 |             |            |       |
| <b>Trucks</b>      |          |          |          | 3%        |          |            | 8%         |            |          | 7%       |             |            |       |
| Factor 2.5         | 0        | 0        | 0        | 3         | 0        | 9          | 20         | 58         | 0        | 0        | 68          | 8          |       |
| PCI                | 0        | 0        | 0        | 7.5       | 0        | 22.5       | 50         | 145        | 0        | 0        | 170         | 20         |       |
| <b>Total (PCI)</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>89</b> | <b>0</b> | <b>300</b> | <b>282</b> | <b>813</b> | <b>0</b> | <b>0</b> | <b>1078</b> | <b>127</b> |       |

**PM**

| Time               | EB       |          |          | WB        |          |            | NB         |            |          | SB       |            |           | Total |
|--------------------|----------|----------|----------|-----------|----------|------------|------------|------------|----------|----------|------------|-----------|-------|
|                    | Rt       | Th       | Lt       | Rt        | Th       | Lt         | Rt         | Th         | Lt       | Rt       | Th         | Lt        |       |
| 4:45               | 0        | 0        | 0        | 5         | 0        | 73         | 124        | 213        | 0        | 0        | 178        | 22        | 615   |
| 5:00               | 0        | 0        | 0        | 9         | 0        | 74         | 101        | 255        | 0        | 0        | 158        | 30        | 627   |
| 5:15               | 0        | 0        | 0        | 5         | 0        | 84         | 102        | 248        | 0        | 0        | 180        | 24        | 643   |
| 5:30               | 0        | 0        | 0        | 10        | 0        | 75         | 105        | 245        | 0        | 0        | 199        | 20        | 654   |
| <b>Total Veh</b>   | <b>0</b> | <b>0</b> | <b>0</b> | <b>29</b> | <b>0</b> | <b>306</b> | <b>432</b> | <b>961</b> | <b>0</b> | <b>0</b> | <b>715</b> | <b>96</b> |       |
| <b>Car Only</b>    | <b>0</b> | <b>0</b> | <b>0</b> | <b>28</b> | <b>0</b> | <b>303</b> | <b>428</b> | <b>951</b> | <b>0</b> | <b>0</b> | <b>686</b> | <b>95</b> |       |
| <b>Factor</b>      | 0        |          |          | 0.996988  |          |            | 0.968399   |            |          | 1.038564 |            |           |       |
| <b>Trucks</b>      |          |          |          | 1%        |          |            | 1%         |            |          | 4%       |            |           |       |
| Factor 2.5         | 0        | 0        | 0        | 1         | 0        | 3          | 4          | 10         | 0        | 0        | 29         | 1         |       |
| PCI                | 0        | 0        | 0        | 2.5       | 0        | 7.5        | 10         | 25         | 0        | 0        | 72.5       | 2.5       |       |
| <b>Total (PCI)</b> | <b>0</b> | <b>0</b> | <b>0</b> | <b>31</b> | <b>0</b> | <b>311</b> | <b>438</b> | <b>976</b> | <b>0</b> | <b>0</b> | <b>759</b> | <b>98</b> |       |

Truck percentage based on 2008 counts

CEDAR AVE. @ BLOOMINGTON AVE.  
 SAN BERNARDINO COUNTY  
 PUBLIC WORKS  
 TRAFFIC DIVISION

File Name : CEDAR@BLN120508  
 Site Code : 00000000  
 Start Date : 05/08/2012  
 Page No : 1

Groups Printed- Unshifted

| Start Time  | CEDAR Northbound |      |      |      | CEDAR Southbound |      |      |      | BLOOMINGTON Eastbound |      |      |      | BLOOMINGTON Westbound |      |      |      | Int. Total |
|-------------|------------------|------|------|------|------------------|------|------|------|-----------------------|------|------|------|-----------------------|------|------|------|------------|
|             | Right            | Thru | Left | Peds | Right            | Thru | Left | Peds | Right                 | Thru | Left | Peds | Right                 | Thru | Left | Peds |            |
| Factor      | 1.0              | 1.0  | 1.0  | 1.0  | 1.0              | 1.0  | 1.0  | 1.0  | 1.0                   | 1.0  | 1.0  | 1.0  | 1.0                   | 1.0  | 1.0  | 1.0  |            |
| 07:00 AM    | 64               | 171  | 0    | 0    | 0                | 274  | 31   | 1    | 0                     | 0    | 0    | 0    | 16                    | 0    | 72   | 0    | 629        |
| 07:15 AM    | 80               | 185  | 0    | 1    | 0                | 243  | 42   | 5    | 0                     | 0    | 0    | 0    | 33                    | 0    | 86   | 0    | 675        |
| 07:30 AM    | 56               | 191  | 0    | 1    | 0                | 244  | 24   | 1    | 0                     | 0    | 0    | 0    | 30                    | 0    | 73   | 0    | 620        |
| 07:45 AM    | 52               | 179  | 0    | 2    | 0                | 215  | 18   | 0    | 0                     | 0    | 1    | 0    | 5                     | 0    | 55   | 1    | 528        |
| Total       | 252              | 726  | 0    | 4    | 0                | 976  | 115  | 7    | 0                     | 0    | 1    | 0    | 84                    | 0    | 286  | 1    | 2452       |
| 08:00 AM    | 55               | 171  | 0    | 1    | 0                | 188  | 29   | 0    | 0                     | 0    | 0    | 0    | 10                    | 1    | 63   | 0    | 518        |
| 08:15 AM    | 44               | 148  | 0    | 0    | 0                | 226  | 14   | 1    | 0                     | 0    | 0    | 0    | 4                     | 0    | 66   | 1    | 504        |
| 08:30 AM    | 47               | 136  | 0    | 0    | 0                | 165  | 19   | 1    | 0                     | 0    | 0    | 0    | 4                     | 0    | 72   | 0    | 444        |
| 08:45 AM    | 42               | 141  | 0    | 1    | 0                | 180  | 14   | 0    | 0                     | 1    | 0    | 0    | 5                     | 0    | 49   | 0    | 433        |
| Total       | 188              | 596  | 0    | 2    | 0                | 759  | 76   | 2    | 0                     | 1    | 0    | 0    | 23                    | 1    | 250  | 1    | 1899       |
| 04:00 PM    | 89               | 265  | 0    | 0    | 0                | 146  | 11   | 2    | 0                     | 0    | 0    | 0    | 8                     | 0    | 79   | 6    | 606        |
| 04:15 PM    | 122              | 274  | 0    | 3    | 0                | 154  | 33   | 0    | 0                     | 0    | 0    | 0    | 19                    | 0    | 49   | 5    | 659        |
| 04:30 PM    | 96               | 229  | 0    | 0    | 0                | 161  | 19   | 0    | 0                     | 0    | 0    | 0    | 6                     | 0    | 85   | 2    | 598        |
| 04:45 PM    | 124              | 213  | 0    | 0    | 0                | 178  | 22   | 1    | 0                     | 0    | 0    | 0    | 5                     | 0    | 73   | 0    | 616        |
| Total       | 431              | 981  | 0    | 3    | 0                | 639  | 85   | 3    | 0                     | 0    | 0    | 0    | 38                    | 0    | 286  | 13   | 2479       |
| 05:00 PM    | 101              | 255  | 0    | 0    | 0                | 158  | 30   | 1    | 1                     | 0    | 0    | 0    | 9                     | 2    | 74   | 0    | 631        |
| 05:15 PM    | 102              | 248  | 0    | 0    | 0                | 180  | 24   | 0    | 0                     | 0    | 0    | 0    | 5                     | 0    | 84   | 0    | 643        |
| 05:30 PM    | 105              | 245  | 0    | 2    | 0                | 199  | 20   | 0    | 0                     | 0    | 0    | 0    | 10                    | 0    | 75   | 4    | 660        |
| 05:45 PM    | 97               | 243  | 0    | 0    | 0                | 161  | 23   | 3    | 1                     | 0    | 0    | 0    | 6                     | 0    | 63   | 0    | 597        |
| Total       | 405              | 991  | 0    | 2    | 0                | 698  | 97   | 4    | 2                     | 0    | 0    | 0    | 30                    | 2    | 296  | 4    | 2531       |
| Grand Total | 1276             | 3294 | 0    | 11   | 0                | 3072 | 373  | 16   | 2                     | 1    | 1    | 0    | 175                   | 3    | 1118 | 19   | 9361       |
| Apprch %    | 27.9             | 71.9 | 0.0  | 0.2  | 0.0              | 88.8 | 10.8 | 0.5  | 50.0                  | 25.0 | 25.0 | 0.0  | 13.3                  | 0.2  | 85.0 | 1.4  |            |
| Total %     | 13.6             | 35.2 | 0.0  | 0.1  | 0.0              | 32.8 | 4.0  | 0.2  | 0.0                   | 0.0  | 0.0  | 0.0  | 1.9                   | 0.0  | 11.9 | 0.2  |            |

**WEBSTER**  
**WEBster Based Signal Timing Evaluation Routine**  
For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

**Cedar Ave at San Bernardino Ave AM**

**Cedar Ave at San Bernardino Ave**

**County of San Bernardino**

**AM Peak Hour**

Parameter Values (using default set 'SANBAG (Existing)')

| Parameter                     | Other | Default | Min. Time Parameter         | Other  | Default | Sat. Flow Parameter           | Other | Default |
|-------------------------------|-------|---------|-----------------------------|--------|---------|-------------------------------|-------|---------|
| Duration of Peak Period (min) |       | 15      | Min. Time (Left Turns, sec) |        | 10      | Sat Flow (1 Left lane, vphg)  | 1700  | 1800    |
| Lost Time (sec)               |       | 2       | Min/Ped Time (Thrus, sec)   | Varies | Varies  | Sat Flow (2 Left lanes, vphg) | 3200  | 3500    |
| Vehicle Length (feet)         |       | 20      |                             |        |         | Sat Flow (1 Thru lane, vphg)  | 1800  | 1900    |
|                               |       |         |                             |        |         | Sat Flow (1 Right lane, vphg) |       | 1800    |

Input Values

| Movement Times                | Eastbound |      |      | Westbound |      |      | Northbound |      |      | Southbound |      |      |
|-------------------------------|-----------|------|------|-----------|------|------|------------|------|------|------------|------|------|
|                               | L         | T    | R    | L         | T    | R    | L          | T    | R    | L          | T    | R    |
| Movement 1: 9 secs            | X         |      |      | X         |      |      |            |      |      |            |      |      |
| Movement 2: 17 secs           |           | X    | X    |           | X    | X    |            |      |      |            |      |      |
| Movement 3: 18 secs           |           |      |      |           |      |      | X          |      |      | X          |      |      |
| Movement 4: 76 secs           |           |      |      |           |      |      |            | X    | X    |            | X    | X    |
| Movement 5: 0 secs            |           |      |      |           |      |      |            |      |      |            |      |      |
| Movement 6: 0 secs            |           |      |      |           |      |      |            |      |      |            |      |      |
| # of Lanes (#, S, P)          | 1         | 1    | 1    | 1         | 2    | S    | 1          | 2    | 1    | 1          | 2    | 1    |
| Unadjusted Volume             | 18        | 113  | 34   | 53        | 115  | 55   | 58         | 704  | 39   | 96         | 930  | 40   |
| Peak Hour Factor (PHF)        | 0.94      | 0.94 | 0.94 | 0.94      | 0.94 | 0.94 | 0.91       | 0.91 | 0.91 | 0.75       | 0.75 | 0.75 |
| Min/Ped Time Override (sec)   | 10        | 31   | 31   | 10        | 31   | 31   | 10         | 25   | 25   | 10         | 25   | 25   |
| Progression Adj. Factor (PAF) | 1.00      | 1.00 | 1.00 | 1.00      | 1.00 | -    | 1.00       | 1.00 | 1.00 | 1.00       | 1.00 | 1.00 |

Output

|                              | ***  |      |      | ***  |      |      | ***  |      |      | ***  |      |      |
|------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Peak Hour Volume (vph)       | 19   | 120  | 36   | 56   | 122  | 59   | 64   | 774  | 43   | 128  | 1240 | 53   |
| Saturation Flow (vph)        | 1700 | 1800 | 1800 | 1700 | 3600 | Shrd | 1700 | 3600 | 1800 | 1700 | 3600 | 1800 |
| X or Volume/Capacity         | 0.19 | 0.53 | 0.16 | 0.56 | 0.40 | -    | 0.28 | 0.35 | 0.04 | 0.56 | 0.56 | 0.05 |
| Effective Green (sec)        | 7    | 15   | 15   | 7    | 15   | -    | 16   | 74   | 74   | 16   | 74   | 74   |
| Split Time (sec)             | 9    | 17   | 17   | 9    | 17   | -    | 18   | 76   | 76   | 18   | 76   | 76   |
| Min. Time or Ped. Time (sec) | 10   | 31   | 31   | 10   | 31   | -    | 10   | 25   | 25   | 10   | 25   | 25   |
| Delay - 15 min pk (sec/veh)  | 58   | 58   | 48   | 76   | 51   | -    | 50   | 12   | 9    | 59   | 14   | 9    |
| Level of Service (LOS)       | E+   | E+   | D    | E-   | D-   | -    | D    | B    | A    | E+   | B    | A    |
| Average 'Q' (veh/ln)         | 1    | 4    | 1    | 2    | 3    | -    | 2    | 5    | 1    | 4    | 8    | 1    |
| Design 'Q'-ft/ln (1.5*Qavg)  | 40   | 120  | 40   | 60   | 100  | -    | 60   | 160  | 40   | 120  | 240  | 40   |
| Do Vehicles Clear?           | YES  | YES  | YES  | YES  | YES  | -    | YES  | YES  | YES  | YES  | YES  | YES  |

Summary of Results

|   |  |
|---|--|
| <b>Whole Intersection</b><br>Weighted Average Delay (seconds) = 23<br>Level of Service - LOS = C+ | <b>Critical Movements</b><br>Weighted Average Delay (seconds) = 24<br>Level of Service - LOS = C+<br>Capacity Utilization - ICU/TCU = 0.56 |
| <b>Predetermined Cycle Length Is 120 sec</b><br><b>Min./Ped. Times May Not Be Satisfied</b>       |  |

**WEBSTER**  
**WEBster Based Signal Timing Evaluation Routine**  
For Capacity and Level of Service Analysis Using HCM 2000 Control Delay  
**Cedar Ave at San Bernardino Ave PM**

**Cedar Ave at San Bernardino Ave**

**County of San Bernardino**

**PM Peak Hour**

Parameter Values (using default set 'SANBAG (Existing)')

| Parameter                     | Other | Default | Min. Time Parameter         | Other  | Default | Sat. Flow Parameter           | Other | Default |
|-------------------------------|-------|---------|-----------------------------|--------|---------|-------------------------------|-------|---------|
| Duration of Peak Period (min) |       | 15      | Min. Time (Left Turns, sec) |        | 10      | Sat Flow (1 Left lane, vphg)  | 1700  | 1800    |
| Lost Time (sec)               |       | 2       | Min/Ped Time (Thrus, sec)   | Varies | Varies  | Sat Flow (2 Left lanes, vphg) | 3200  | 3500    |
| Vehicle Length (feet)         |       | 20      |                             |        |         | Sat Flow (1 Thru lane, vphg)  | 1800  | 1900    |
|                               |       |         |                             |        |         | Sat Flow (1 Right lane, vphg) |       | 1800    |

Input Values

|                               | Eastbound |      |      | Westbound |      |      | Northbound |      |      | Southbound |      |      |
|-------------------------------|-----------|------|------|-----------|------|------|------------|------|------|------------|------|------|
| Movement Times                | L         | *T*  | R    | *L*       | T    | R    | L          | *T*  | R    | *L*        | T    | R    |
| Movement 1: 10 secs           | X         |      |      | X         |      |      |            |      |      |            |      |      |
| Movement 2: 31 secs           |           | X    | X    |           | X    | X    |            |      |      |            |      |      |
| Movement 3: 10 secs           |           |      |      |           |      |      | X          |      |      | X          |      |      |
| Movement 4: 76 secs           |           |      |      |           |      |      |            | X    | X    |            | X    | X    |
| Movement 5: 0 secs            |           |      |      |           |      |      |            |      |      |            |      |      |
| Movement 6: 0 secs            |           |      |      |           |      |      |            |      |      |            |      |      |
| # of Lanes (#, S, P)          | 1         | 1    | 1    | 1         | 2    | S    | 1          | 2    | 1    | 1          | 2    | 1    |
| Unadjusted Volume             | 37        | 152  | 52   | 31        | 108  | 48   | 37         | 922  | 54   | 40         | 784  | 35   |
| Peak Hour Factor (PHF)        | 1.00      | 1.00 | 1.00 | 0.72      | 0.72 | 0.72 | 0.86       | 0.86 | 0.86 | 0.93       | 0.93 | 0.93 |
| Min/Ped Time Override (sec)   | 10        | 31   | 31   | 10        | 31   | 31   | 10         | 25   | 25   | 10         | 25   | 25   |
| Progression Adj. Factor (PAF) | 1.00      | 1.00 | 1.00 | 1.00      | 1.00 | -    | 1.00       | 1.00 | 1.00 | 1.00       | 1.00 | 1.00 |

Output

|                              | ***  |      |      | ***  |      |      | ***  |      |      | ***  |      |      |
|------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Peak Hour Volume (vph)       | 37   | 152  | 52   | 43   | 150  | 67   | 43   | 1072 | 63   | 43   | 843  | 38   |
| Saturation Flow (vph)        | 1700 | 1800 | 1800 | 1700 | 3600 | Shrd | 1700 | 3600 | 1800 | 1700 | 3600 | 1800 |
| X or Volume/Capacity         | 0.35 | 0.37 | 0.13 | 0.40 | 0.26 | -    | 0.40 | 0.51 | 0.06 | 0.40 | 0.40 | 0.04 |
| Effective Green (sec)        | 8    | 29   | 29   | 8    | 29   | -    | 8    | 74   | 74   | 8    | 74   | 74   |
| Split Time (sec)             | 10   | 31   | 31   | 10   | 31   | -    | 10   | 76   | 76   | 10   | 76   | 76   |
| Min. Time or Ped. Time (sec) | 10   | 31   | 31   | 10   | 31   | -    | 10   | 25   | 25   | 10   | 25   | 25   |
| Delay - 15 min pk (sec/veh)  | 66   | 44   | 40   | 68   | 41   | -    | 68   | 17   | 12   | 68   | 15   | 11   |
| Level of Service (LOS)       | E    | D    | D+   | E    | D    | -    | E    | B    | B    | E    | B    | B    |
| Average 'Q' (veh/ln)         | 1    | 4    | 1    | 1    | 3    | -    | 1    | 8    | 1    | 1    | 6    | 1    |
| Design 'Q'-ft/ln (1.5*Qavg)  | 40   | 120  | 40   | 40   | 100  | -    | 40   | 240  | 40   | 40   | 180  | 40   |
| Do Vehicles Clear?           | YES  | YES  | YES  | YES  | YES  | -    | YES  | YES  | YES  | YES  | YES  | YES  |

Summary of Results

| Whole Intersection   | Critical Movements  |
|--|---|
| Weighted Average Delay (seconds) = 24<br>Level of Service - LOS = C+ | Weighted Average Delay (seconds) = 24<br>Level of Service - LOS = C+<br>Capacity Utilization - ICU/TCU = 0.46 |
| Required Cycle Length is 127 sec<br>Min/Ped. Times Satisfied         |   |

**PCI CALCULATION.**

Intersection:

**Cedar Ave. @ San Bernardino Ave.**

Date:

5/3/2012

**AM**

| Time             | EB        |            |           | WB        |            |           | NB        |            |           | SB        |            |           | Total |
|------------------|-----------|------------|-----------|-----------|------------|-----------|-----------|------------|-----------|-----------|------------|-----------|-------|
|                  | Rt        | Th         | Lt        |       |
| 7:00             | 9         | 26         | 3         | 6         | 17         | 12        | 4         | 150        | 6         | 7         | 242        | 13        | 495   |
| 7:15             | 5         | 31         | 3         | 17        | 20         | 19        | 15        | 163        | 13        | 8         | 257        | 51        | 602   |
| 7:30             | 11        | 29         | 4         | 18        | 39         | 13        | 12        | 175        | 14        | 9         | 209        | 19        | 552   |
| 7:45             | 4         | 24         | 8         | 13        | 36         | 8         | 7         | 176        | 22        | 15        | 167        | 11        | 491   |
| <b>Total Veh</b> | <b>29</b> | <b>110</b> | <b>18</b> | <b>54</b> | <b>112</b> | <b>52</b> | <b>38</b> | <b>664</b> | <b>55</b> | <b>39</b> | <b>875</b> | <b>94</b> |       |
| <b>Car Only</b>  | <b>24</b> | <b>105</b> | <b>18</b> | <b>52</b> | <b>108</b> | <b>51</b> | <b>37</b> | <b>611</b> | <b>51</b> | <b>38</b> | <b>821</b> | <b>92</b> |       |
| <b>Factor</b>    | 0.942308  |            |           | 0.941964  |            |           | 0.914921  |            |           | 0.752373  |            |           |       |

**Trucks**

|                    |           |            |           |           |            |           |           |            |           |           |            |           |
|--------------------|-----------|------------|-----------|-----------|------------|-----------|-----------|------------|-----------|-----------|------------|-----------|
| 2 axle             | 2         | 4          | 0         | 2         | 3          | 1         | 1         | 19         | 2         | 1         | 30         | 1         |
| PCI                | 3         | 6          | 0         | 3         | 4.5        | 1.5       | 1.5       | 0          | 3         | 1.5       | 45         | 1.5       |
| 3 axle             | 2         | 1          | 0         | 0         | 1          | 0         | 0         | 9          | 2         | 0         | 8          | 1         |
| PCI                | 4         | 2          | 0         | 0         | 2          | 0         | 0         | 18         | 4         | 0         | 16         | 2         |
| 4+ axle            | 1         | 0          | 0         | 0         | 0          | 0         | 0         | 25         | 0         | 0         | 16         | 0         |
| PCI                | 3         | 0          | 0         | 0         | 0          | 0         | 0         | 75         | 0         | 0         | 48         | 0         |
| <b>Total (PCI)</b> | <b>34</b> | <b>113</b> | <b>18</b> | <b>55</b> | <b>115</b> | <b>53</b> | <b>39</b> | <b>704</b> | <b>58</b> | <b>40</b> | <b>930</b> | <b>96</b> |

**PM**

| Time             | EB        |            |           | WB        |            |           | NB        |            |           | SB        |            |           | Total |
|------------------|-----------|------------|-----------|-----------|------------|-----------|-----------|------------|-----------|-----------|------------|-----------|-------|
|                  | Rt        | Th         | Lt        |       |
| 4:45             | 16        | 35         | 6         | 5         | 29         | 10        | 15        | 235        | 11        | 8         | 162        | 7         | 539   |
| 5:00             | 14        | 52         | 13        | 11        | 30         | 8         | 13        | 220        | 6         | 10        | 190        | 15        | 582   |
| 5:15             | 8         | 34         | 10        | 24        | 30         | 7         | 12        | 255        | 11        | 8         | 195        | 7         | 601   |
| 5:30             | 12        | 30         | 7         | 7         | 17         | 5         | 13        | 197        | 9         | 9         | 197        | 10        | 513   |
| <b>Total Veh</b> | <b>50</b> | <b>151</b> | <b>36</b> | <b>47</b> | <b>106</b> | <b>30</b> | <b>53</b> | <b>907</b> | <b>37</b> | <b>35</b> | <b>744</b> | <b>39</b> |       |
| <b>Car Only</b>  | <b>49</b> | <b>149</b> | <b>34</b> | <b>46</b> | <b>102</b> | <b>28</b> | <b>52</b> | <b>877</b> | <b>37</b> | <b>35</b> | <b>711</b> | <b>37</b> |       |
| <b>Factor</b>    | 1.115385  |            |           | 0.721311  |            |           | 0.868705  |            |           | 0.932143  |            |           |       |

**Trucks**

|                    |           |            |           |           |            |           |           |            |           |           |            |           |
|--------------------|-----------|------------|-----------|-----------|------------|-----------|-----------|------------|-----------|-----------|------------|-----------|
| 2 axle             | 0         | 2          | 2         | 1         | 4          | 2         | 1         | 14         | 0         | 0         | 13         | 2         |
| PCI                | 0         | 3          | 3         | 1.5       | 6          | 3         | 1.5       | 0          | 0         | 0         | 19.5       | 3         |
| 3 axle             | 0         | 0          | 0         | 0         | 0          | 0         | 0         | 3          | 0         | 0         | 7          | 0         |
| PCI                | 0         | 0          | 0         | 0         | 0          | 0         | 0         | 6          | 0         | 0         | 14         | 0         |
| 4+ axle            | 1         | 0          | 0         | 0         | 0          | 0         | 0         | 13         | 0         | 0         | 13         | 0         |
| PCI                | 3         | 0          | 0         | 0         | 0          | 0         | 0         | 39         | 0         | 0         | 39         | 0         |
| <b>Total (PCI)</b> | <b>52</b> | <b>152</b> | <b>37</b> | <b>48</b> | <b>108</b> | <b>31</b> | <b>54</b> | <b>922</b> | <b>37</b> | <b>35</b> | <b>784</b> | <b>40</b> |

**CEDAR AVE.@ SAN BERNARDINO AVE.  
SAN BERNARDINO COUNTY**

**PUBLIC WORKS  
TRAFFIC DIVISION**

File Name : CEDAR@SB120503

Site Code : 00000000

Start Date : 05/03/2012

Page No : 1

Groups Printed- Unshifted

| Start Time  | CEDAR AVE.<br>Northbound |      |      |      | CEDAR AVE.<br>Southbound |      |      |      | SAN BERNARDINO AVE.<br>Eastbound |      |      |      | SAN BERNARDINO AVE.<br>Westbound |      |      |      | Int.<br>Total |
|-------------|--------------------------|------|------|------|--------------------------|------|------|------|----------------------------------|------|------|------|----------------------------------|------|------|------|---------------|
|             | Right                    | Thru | Left | Peds | Right                    | Thru | Left | Peds | Right                            | Thru | Left | Peds | Right                            | Thru | Left | Peds |               |
| Factor      | 1.0                      | 1.0  | 1.0  | 1.0  | 1.0                      | 1.0  | 1.0  | 1.0  | 1.0                              | 1.0  | 1.0  | 1.0  | 1.0                              | 1.0  | 1.0  | 1.0  |               |
| 07:00 AM    | 4                        | 150  | 6    | 0    | 7                        | 242  | 13   | 1    | 9                                | 26   | 3    | 0    | 6                                | 17   | 12   | 0    | 496           |
| 07:15 AM    | 15                       | 163  | 13   | 1    | 8                        | 257  | 51   | 0    | 5                                | 31   | 3    | 0    | 17                               | 20   | 19   | 2    | 605           |
| 07:30 AM    | 12                       | 175  | 14   | 0    | 9                        | 209  | 19   | 0    | 11                               | 29   | 4    | 0    | 18                               | 39   | 13   | 3    | 555           |
| 07:45 AM    | 7                        | 176  | 22   | 0    | 15                       | 167  | 11   | 0    | 4                                | 24   | 8    | 0    | 13                               | 36   | 8    | 0    | 491           |
| Total       | 38                       | 664  | 55   | 1    | 39                       | 875  | 94   | 1    | 29                               | 110  | 18   | 0    | 54                               | 112  | 52   | 5    | 2147          |
| 08:00 AM    | 5                        | 104  | 19   | 0    | 18                       | 212  | 6    | 1    | 10                               | 23   | 3    | 0    | 7                                | 49   | 5    | 1    | 463           |
| 08:15 AM    | 4                        | 130  | 13   | 1    | 10                       | 196  | 20   | 0    | 11                               | 24   | 8    | 0    | 3                                | 22   | 4    | 1    | 447           |
| 08:30 AM    | 4                        | 134  | 8    | 0    | 7                        | 181  | 9    | 0    | 10                               | 18   | 4    | 0    | 4                                | 17   | 8    | 0    | 404           |
| 08:45 AM    | 6                        | 109  | 10   | 1    | 7                        | 163  | 7    | 1    | 5                                | 16   | 9    | 1    | 6                                | 24   | 4    | 0    | 369           |
| Total       | 19                       | 477  | 50   | 2    | 42                       | 752  | 42   | 2    | 36                               | 81   | 24   | 1    | 20                               | 112  | 21   | 2    | 1683          |
| 04:00 PM    | 19                       | 204  | 13   | 0    | 6                        | 61   | 5    | 1    | 11                               | 44   | 8    | 0    | 14                               | 30   | 2    | 0    | 418           |
| 04:15 PM    | 14                       | 203  | 6    | 0    | 4                        | 163  | 17   | 1    | 12                               | 34   | 5    | 1    | 9                                | 19   | 5    | 4    | 497           |
| 04:30 PM    | 10                       | 199  | 13   | 1    | 9                        | 187  | 12   | 0    | 14                               | 26   | 11   | 0    | 6                                | 20   | 6    | 2    | 516           |
| 04:45 PM    | 15                       | 235  | 11   | 0    | 8                        | 162  | 7    | 0    | 16                               | 35   | 6    | 1    | 5                                | 29   | 10   | 0    | 540           |
| Total       | 58                       | 841  | 43   | 1    | 27                       | 573  | 41   | 2    | 53                               | 139  | 30   | 2    | 34                               | 98   | 23   | 6    | 1971          |
| 05:00 PM    | 13                       | 220  | 6    | 1    | 10                       | 190  | 15   | 2    | 14                               | 52   | 13   | 5    | 11                               | 30   | 8    | 0    | 590           |
| 05:15 PM    | 12                       | 255  | 11   | 0    | 8                        | 195  | 7    | 5    | 8                                | 34   | 10   | 0    | 24                               | 30   | 7    | 3    | 609           |
| 05:30 PM    | 13                       | 197  | 9    | 0    | 9                        | 197  | 10   | 3    | 12                               | 30   | 7    | 9    | 7                                | 17   | 5    | 5    | 530           |
| 05:45 PM    | 17                       | 203  | 12   | 1    | 13                       | 153  | 11   | 0    | 10                               | 38   | 11   | 0    | 8                                | 33   | 5    | 10   | 525           |
| Total       | 55                       | 875  | 38   | 2    | 40                       | 735  | 43   | 10   | 44                               | 154  | 41   | 14   | 50                               | 110  | 25   | 18   | 2254          |
| Grand Total | 170                      | 2857 | 186  | 6    | 148                      | 2935 | 220  | 15   | 162                              | 484  | 113  | 17   | 158                              | 432  | 121  | 31   | 8055          |
| Apprch %    | 5.3                      | 88.8 | 5.8  | 0.2  | 4.5                      | 88.5 | 6.6  | 0.5  | 20.9                             | 62.4 | 14.6 | 2.2  | 21.3                             | 58.2 | 16.3 | 4.2  |               |
| Total %     | 2.1                      | 35.5 | 2.3  | 0.1  | 1.8                      | 36.4 | 2.7  | 0.2  | 2.0                              | 6.0  | 1.4  | 0.2  | 2.0                              | 5.4  | 1.5  | 0.4  |               |

SAN BERNARDINO COUNTY  
 Department Of Public works  
 Traffic Division

COMMERCIAL TRUCK COUNT

LOCATION: Cedar Ave. @ San Bernardino Ave.  
 Cedar Ave.

COUNT BY: David Tran

DATE: 5/3/2012

| TIME         | TYPE     | NB RT | NB THRU | NB LT | SB RT | SB THRU | SB LT | EB RT | EB THRU | EB LT | WB RT | WB THRU | WB LT |
|--------------|----------|-------|---------|-------|-------|---------|-------|-------|---------|-------|-------|---------|-------|
| 7:00-7:15 AM | 2-AXLE   |       | 6       | 1     |       | 8       |       | 1     | 1       |       |       | 1       |       |
|              | 3-AXLE   |       | 2       | 1     |       |         | 1     |       |         |       |       | 1       |       |
|              | 4-AXLE   |       |         |       |       |         |       |       |         |       |       |         |       |
|              | 5-AXLE + |       | 8       |       |       | 8       |       |       |         |       |       |         |       |
| 7:15-7:30 AM | 2-AXLE   | 1     | 5       |       |       | 9       |       |       | 1       |       |       |         | 1     |
|              | 3-AXLE   |       | 2       | 1     |       | 2       |       |       |         |       |       |         |       |
|              | 4-AXLE   |       |         |       |       |         |       |       |         |       |       |         |       |
|              | 5-AXLE + |       | 9       |       |       | 2       |       | 1     |         |       |       |         |       |
| 7:30-7:45 AM | 2-AXLE   |       | 6       |       |       | 7       |       |       | 1       |       | 1     | 1       |       |
|              | 3-AXLE   |       | 2       |       |       | 3       |       | 2     |         |       |       |         |       |
|              | 4-AXLE   |       |         |       |       |         |       |       |         |       |       |         |       |
|              | 5-AXLE + |       | 5       |       |       | 4       |       |       |         |       |       |         |       |
| 7:45-8:00 AM | 2-AXLE   |       | 2       | 1     | 1     | 6       | 1     | 1     | 1       |       | 1     | 1       |       |
|              | 3-AXLE   |       | 3       |       |       | 3       |       |       | 1       |       |       |         |       |
|              | 4-AXLE   |       | 2       |       |       |         |       |       |         |       |       |         |       |
|              | 5-AXLE + |       | 1       |       |       | 2       |       |       |         |       |       |         |       |

|              |          |  |   |   |   |    |   |   |   |   |   |   |   |
|--------------|----------|--|---|---|---|----|---|---|---|---|---|---|---|
| 8:00-8:15 AM | 2-AXLE   |  | 2 | 1 | 1 | 6  |   |   |   |   |   | 1 |   |
|              | 3-AXLE   |  | 2 |   |   |    |   |   |   |   |   |   | 1 |
|              | 4-AXLE   |  |   |   |   | 1  |   |   |   |   |   |   |   |
|              | 5-AXLE + |  | 4 |   |   | 7  |   |   |   |   |   |   | 1 |
| 8:15-8:30 AM | 2-AXLE   |  | 4 |   |   | 5  |   |   |   |   |   |   |   |
|              | 3-AXLE   |  | 1 |   |   | 4  |   | 1 | 1 |   |   |   |   |
|              | 4-AXLE   |  |   |   |   |    |   |   |   |   |   |   |   |
|              | 5-AXLE + |  | 7 | 1 |   | 12 | 1 |   |   |   |   |   |   |
| 8:30-8:45 AM | 2-AXLE   |  | 6 | 1 |   | 4  |   |   |   |   |   | 1 |   |
|              | 3-AXLE   |  | 4 |   |   | 1  |   |   |   |   |   |   |   |
|              | 4-AXLE   |  |   |   |   |    |   |   |   |   |   |   |   |
|              | 5-AXLE + |  | 2 |   |   | 5  | 1 |   |   |   |   |   |   |
| 8:45-9:00 AM | 2-AXLE   |  | 2 |   |   | 5  |   |   | 2 | 1 | 1 | 3 |   |
|              | 3-AXLE   |  |   |   |   |    |   |   |   |   |   |   |   |
|              | 4-AXLE   |  |   |   |   | 2  |   |   |   |   |   |   |   |
|              | 5-AXLE + |  | 4 |   |   | 6  |   |   |   |   | 1 |   |   |

| TIME         | TYPE     | NB RT | NB THRU | NB LT | SB RT | SB THRU | SB LT | EB RT | EB THRU | EB LT | WB RT | WB THRU | WB LT |
|--------------|----------|-------|---------|-------|-------|---------|-------|-------|---------|-------|-------|---------|-------|
| 4:00-4:15 PM | 2-AXLE   |       | 5       | 1     |       | 3       |       |       | 1       |       |       | 4       |       |
|              | 3-AXLE   |       | 1       |       |       | 1       |       |       |         |       |       |         |       |
|              | 4-AXLE   |       |         |       |       |         |       |       |         |       |       |         |       |
|              | 5-AXLE + |       | 4       | 1     |       | 4       |       |       |         |       |       |         |       |
| 4:15-4:30 PM | 2-AXLE   |       | 4       |       |       | 5       |       |       | 1       | 2     |       |         |       |
|              | 3-AXLE   |       | 1       |       |       | 4       |       | 3     |         |       |       |         |       |
|              | 4-AXLE   |       |         |       |       |         |       |       |         |       |       |         |       |
|              | 5-AXLE + |       | 3       |       |       | 6       |       |       |         |       |       |         |       |
| 4:30-4:45 PM | 2-AXLE   |       | 4       |       |       | 2       |       |       | 1       |       | 1     | 1       |       |
|              | 3-AXLE   |       |         |       |       | 4       |       |       |         |       |       |         |       |
|              | 4-AXLE   |       |         |       |       |         |       |       |         |       |       |         |       |
|              | 5-AXLE + |       | 2       |       |       | 1       |       | 1     |         |       |       |         |       |

|              |          |   |   |  |  |   |   |   |   |   |   |   |   |
|--------------|----------|---|---|--|--|---|---|---|---|---|---|---|---|
| 4:45-5:00 PM | 2-AXLE   |   | 3 |  |  | 4 | 1 |   | 1 |   |   | 1 | 1 |
|              | 3-AXLE   |   | 1 |  |  | 3 |   |   |   |   |   |   |   |
|              | 4-AXLE   |   |   |  |  |   |   |   |   |   |   |   |   |
|              | 5-AXLE + |   | 3 |  |  | 7 |   | 1 |   |   |   |   |   |
| 5:00-5:15 PM | 2-AXLE   |   | 5 |  |  | 3 |   |   |   |   |   | 2 |   |
|              | 3-AXLE   |   | 1 |  |  | 3 |   |   |   |   |   |   |   |
|              | 4-AXLE   |   |   |  |  |   |   |   |   |   |   |   |   |
|              | 5-AXLE + |   | 3 |  |  | 1 |   |   |   |   |   |   |   |
| 5:15-5:30 PM | 2-AXLE   |   | 4 |  |  | 4 |   |   | 1 |   |   |   | 1 |
|              | 3-AXLE   |   |   |  |  | 1 |   |   |   |   |   |   |   |
|              | 4-AXLE   |   |   |  |  |   |   |   |   |   |   |   |   |
|              | 5-AXLE + |   | 6 |  |  | 2 |   |   |   |   |   |   |   |
| 5:30-5:45 PM | 2-AXLE   | 1 | 2 |  |  | 2 | 1 |   |   | 2 | 1 | 1 |   |
|              | 3-AXLE   |   | 1 |  |  |   |   |   |   |   |   |   |   |
|              | 4-AXLE   |   |   |  |  |   |   |   |   |   |   |   |   |
|              | 5-AXLE + |   | 1 |  |  | 3 |   |   |   |   |   |   |   |

|              |          |  |   |   |  |   |  |  |   |  |  |   |  |
|--------------|----------|--|---|---|--|---|--|--|---|--|--|---|--|
| 5:45-6:00 PM | 2-AXLE   |  | 3 | 1 |  | 3 |  |  | 2 |  |  | 1 |  |
|              | 3-AXLE   |  | 1 |   |  | 1 |  |  |   |  |  |   |  |
|              | 4-AXLE   |  |   |   |  |   |  |  |   |  |  |   |  |
|              | 5-AXLE + |  | 1 |   |  | 2 |  |  |   |  |  |   |  |

**WEBSTER**  
**Webster Based Signal Timing Evaluation Routine**  
For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

**Cherry Ave @ Arrow Rte AM**

**Cherry Ave @ Arrow Rte**

**County of San Bernardino**

**AM Peak Hour**

**Parameter Values (using default set 'SANBAG (Existing)')**

| Parameter                     | Other | Default | Min. Time Parameter         | Other  | Default | Sat. Flow Parameter           | Other | Default |
|-------------------------------|-------|---------|-----------------------------|--------|---------|-------------------------------|-------|---------|
| Duration of Peak Period (min) |       | 15      | Min. Time (Left Turns, sec) |        | 10      | Sat Flow (1 Left lane, vphg)  | 1700  | 1800    |
| Lost Time (sec)               |       | 2       | Min/Ped Time (Thrus, sec)   | Varies | Varies  | Sat Flow (2 Left lanes, vphg) | 3200  | 3500    |
| Vehicle Length (feet)         |       | 20      |                             |        |         | Sat Flow (1 Thru lane, vphg)  | 1800  | 1900    |
|                               |       |         |                             |        |         | Sat Flow (1 Right lane, vphg) |       | 1800    |

**Input Values**

|                               | Eastbound |      |      | Westbound |      |      | Northbound |      |      | Southbound |      |      |
|-------------------------------|-----------|------|------|-----------|------|------|------------|------|------|------------|------|------|
|                               | L         | *T*  | R    | *L*       | T    | R    | *L*        | T    | R    | L          | *T*  | R    |
| Movement Times                |           |      |      |           |      |      |            |      |      |            |      |      |
| Movement 1: 11 secs           | X         |      |      | X         |      |      |            |      |      |            |      |      |
| Movement 2: 25 secs           |           | X    | X    |           | X    | X    |            |      |      |            |      |      |
| Movement 3: 10 secs           |           |      |      |           |      |      | X          |      |      | X          |      |      |
| Movement 4: 31 secs           |           |      |      |           |      |      |            | X    | X    |            | X    | X    |
| Movement 5: 0 secs            |           |      |      |           |      |      |            |      |      |            |      |      |
| Movement 6: 0 secs            |           |      |      |           |      |      |            |      |      |            |      |      |
| # of Lanes (#, S, P)          | 1         | 1    | 1    | 1         | 2    | S    | 1          | 2    | S    | 1          | 2    | S    |
| Unadjusted Volume             | 29        | 195  | 73   | 118       | 297  | 48   | 109        | 362  | 75   | 55         | 610  | 104  |
| Peak Hour Factor (PHF)        | 0.87      | 0.87 | 0.87 | 0.83      | 0.83 | 0.83 | 0.84       | 0.94 | 0.94 | 0.75       | 0.75 | 0.75 |
| Min/Ped Time Override (sec)   | 10        | 25   | 25   | 10        | 25   | 25   | 10         | 25   | 25   | 10         | 25   | 25   |
| Progression Adj. Factor (PAF) | 1.00      | 1.00 | 1.00 | 1.00      | 1.00 | -    | 1.00       | 1.00 | -    | 1.00       | 1.00 | -    |

**Output**

|                              | ***  |      |      | ***  |      |      | ***  |      |      | ***  |      |      |
|------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Peak Hour Volume (vph)       | 33   | 224  | 84   | 142  | 358  | 58   | 116  | 385  | 80   | 73   | 813  | 139  |
| Saturation Flow (vph)        | 1700 | 1800 | 1800 | 1700 | 3600 | Shrd | 1700 | 3600 | Shrd | 1700 | 3600 | Shrd |
| X or Volume/Capacity         | 0.17 | 0.42 | 0.16 | 0.71 | 0.39 | -    | 0.66 | 0.34 | -    | 0.41 | 0.70 | -    |
| Effective Green (sec)        | 9    | 23   | 23   | 9    | 23   | -    | 8    | 29   | -    | 8    | 29   | -    |
| Split Time (sec)             | 11   | 25   | 25   | 11   | 25   | -    | 10   | 31   | -    | 10   | 31   | -    |
| Min. Time or Ped. Time (sec) | 10   | 25   | 25   | 10   | 25   | -    | 10   | 25   | -    | 10   | 25   | -    |
| Delay - 15 min pk (sec/veh)  | 32   | 24   | 20   | 52   | 22   | -    | 51   | 18   | -    | 39   | 23   | -    |
| Level of Service (LOS)       | C-   | C+   | C+   | D-   | C+   | -    | D-   | B    | -    | D+   | C+   | -    |
| Average 'Q' (veh/ln)         | 1    | 3    | 1    | 3    | 3    | -    | 2    | 3    | -    | 1    | 6    | -    |
| Design 'Q'-ft/ln (1.5*Qavg)  | 40   | 100  | 40   | 100  | 100  | -    | 60   | 100  | -    | 40   | 180  | -    |
| Do Vehicles Clear?           | YES  | YES  | YES  | YES  | YES  | -    | YES  | YES  | -    | YES  | YES  | -    |

**Summary of Results**

| Whole Intersection  | Critical Movements   |
|---|--|
| Weighted Average Delay (seconds) = 26<br>Level of Service - LOS = C | Weighted Average Delay (seconds) = 29<br>Level of Service - LOS = C<br>Capacity Utilization - ICU/TCU = 0.60 |
| Required Cycle Length Is 77 sec<br>Min./Ped. Times Satisfied        |  |

**WEBSTER**  
**WEBster Based Signal Timing Evaluation Routine**  
For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

**Cherry Ave @ Arrow Rte PM**

**Cherry Ave @ Arrow Rte**

**County of San Bernardino**

**PM Peak Hour**

Parameter Values (using default set 'SANBAG (Existing)')

| Parameter                     | Other | Default | Min. Time Parameter         | Other  | Default | Sat. Flow Parameter           | Other | Default |
|-------------------------------|-------|---------|-----------------------------|--------|---------|-------------------------------|-------|---------|
| Duration of Peak Period (min) |       | 15      | Min. Time (Left Turns, sec) |        | 10      | Sat Flow (1 Left lane, vphg)  | 1700  | 1800    |
| Lost Time (sec)               |       | 2       | Min/Ped Time (Thrus, sec)   | Varies | Varies  | Sat Flow (2 Left lanes, vphg) | 3200  | 3500    |
| Vehicle Length (feet)         |       | 20      |                             |        |         | Sat Flow (1 Thru lane, vphg)  | 1800  | 1900    |
|                               |       |         |                             |        |         | Sat Flow (1 Right lane, vphg) |       | 1800    |

**Input Values**

|                               | Eastbound |      |      | Westbound |      |      | Northbound |      |      | Southbound |      |      |
|-------------------------------|-----------|------|------|-----------|------|------|------------|------|------|------------|------|------|
| Movement Times                | L         | *T*  | R    | *L*       | T    | R    | *L*        | *T*  | R    | L          | T    | R    |
| Movement 1: 10 secs           | X         |      |      | X         |      |      |            |      |      |            |      |      |
| Movement 2: 25 secs           |           | X    | X    |           | X    | X    |            |      |      |            |      |      |
| Movement 3: 10 secs           |           |      |      |           |      |      | X          |      |      | X          |      |      |
| Movement 4: 25 secs           |           |      |      |           |      |      |            | X    | X    |            | X    | X    |
| Movement 5: 0 secs            |           |      |      |           |      |      |            |      |      |            |      |      |
| Movement 6: 0 secs            |           |      |      |           |      |      |            |      |      |            |      |      |
| # of Lanes (#, S, P)          | 1         | 1    | 1    | 1         | 2    | S    | 1          | 2    | S    | 1          | 2    | S    |
| Unadjusted Volume             | 89        | 388  | 101  | 122       | 248  | 74   | 127        | 655  | 112  | 78         | 513  | 62   |
| Peak Hour Factor (PHF)        | 1.00      | 1.00 | 1.00 | 0.87      | 0.87 | 0.87 | 0.95       | 0.95 | 0.95 | 0.75       | 0.75 | 0.75 |
| Min/Ped Time Override (sec)   | 10        | 25   | 25   | 10        | 25   | 25   | 10         | 25   | 25   | 10         | 25   | 25   |
| Progression Adj. Factor (PAF) | 1.00      | 1.00 | 1.00 | 1.00      | 1.00 | -    | 1.00       | 1.00 | -    | 1.00       | 1.00 | -    |

**Output**

|                              | ***  |      |      | ***  |      |      | ***  |      |      | ***  |      |      |
|------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Peak Hour Volume (vph)       | 89   | 388  | 101  | 140  | 285  | 85   | 134  | 689  | 118  | 104  | 684  | 83   |
| Saturation Flow (vph)        | 1700 | 1800 | 1800 | 1700 | 3600 | Shrd | 1700 | 3600 | Shrd | 1700 | 3600 | Shrd |
| X or Volume/Capacity         | 0.46 | 0.66 | 0.17 | 0.72 | 0.31 | -    | 0.69 | 0.68 | -    | 0.54 | 0.65 | -    |
| Effective Green (sec)        | 8    | 23   | 23   | 8    | 23   | -    | 8    | 23   | -    | 8    | 23   | -    |
| Split Time (sec)             | 10   | 25   | 25   | 10   | 25   | -    | 10   | 25   | -    | 10   | 25   | -    |
| Min. Time or Ped. Time (sec) | 10   | 25   | 25   | 10   | 25   | -    | 10   | 25   | -    | 10   | 25   | -    |
| Delay - 15 min pk (sec/veh)  | 37   | 26   | 17   | 50   | 18   | -    | 48   | 24   | -    | 39   | 23   | -    |
| Level of Service (LOS)       | D+   | C    | B    | D-   | B    | -    | D    | C+   | -    | D+   | C+   | -    |
| Average 'Q' (veh/ln)         | 2    | 5    | 1    | 3    | 2    | -    | 2    | 5    | -    | 2    | 5    | -    |
| Design 'Q'-ft/ln (1.5*Qavg)  | 60   | 160  | 40   | 100  | 60   | -    | 60   | 160  | -    | 60   | 160  | -    |
| Do Vehicles Clear?           | YES  | YES  | YES  | YES  | YES  | -    | YES  | YES  | -    | YES  | YES  | -    |

**Summary of Results**

| Whole Intersection  | Critical Movements   |
|---|--|
| Weighted Average Delay (seconds) = 27<br>Level of Service - LOS = C | Weighted Average Delay (seconds) = 29<br>Level of Service - LOS = C<br>Capacity Utilization - ICU/TCU = 0.68 |
| Required Cycle Length is 70 sec<br>Min./Ped. Times Satisfied        |  |

**AM**

**Cherry Ave. at Arrow Rt.**

|                          | EB |           |            |           | WB |           |            |           | NB |           |            |            | SB |           |            | Total     |     |
|--------------------------|----|-----------|------------|-----------|----|-----------|------------|-----------|----|-----------|------------|------------|----|-----------|------------|-----------|-----|
|                          | Rt | Th        | Lt         |           | Rt | Th        | Lt         |           | Rt | Th        | Lt         |            | Rt | Th        | Lt         |           |     |
| 7:15                     |    | 11        | 43         | 5         |    | 13        | 57         | 22        |    | 9         | 84         | 24         |    | 15        | 131        | 7         | 421 |
| 7:30                     |    | 17        | 42         | 7         |    | 5         | 82         | 31        |    | 17        | 88         | 35         |    | 29        | 142        | 11        | 506 |
| 7:45                     |    | 16        | 46         | 7         |    | 14        | 81         | 19        |    | 7         | 93         | 20         |    | 33        | 171        | 15        | 522 |
| 8:00                     |    | 21        | 40         | 8         |    | 13        | 58         | 24        |    | 23        | 87         | 28         |    | 17        | 118        | 19        | 456 |
| <b>Total Veh + Truck</b> |    | <b>65</b> | <b>171</b> | <b>27</b> |    | <b>45</b> | <b>278</b> | <b>96</b> |    | <b>56</b> | <b>352</b> | <b>107</b> |    | <b>94</b> | <b>562</b> | <b>52</b> |     |
| <b>Veh Only</b>          |    | <b>61</b> | <b>154</b> | <b>26</b> |    | <b>40</b> | <b>261</b> | <b>79</b> |    | <b>43</b> | <b>304</b> | <b>103</b> |    | <b>84</b> | <b>521</b> | <b>50</b> |     |
| <b>Trucks</b>            |    |           | 0.873188   |           |    |           | 0.833333   |           |    |           | 0.9375     |            |    |           | 0.747717   |           |     |

|                    |  |           |            |           |  |           |            |            |  |           |            |            |  |            |            |           |  |
|--------------------|--|-----------|------------|-----------|--|-----------|------------|------------|--|-----------|------------|------------|--|------------|------------|-----------|--|
| 2 axle             |  | 0         | 5          | 0         |  | 5         | 8          | 6          |  | 5         | 26         | 4          |  | 4          | 18         | 0         |  |
| PCI                |  | 0         | 7.5        | 0         |  | 7.5       | 12         | 9          |  | 7.5       | 0          | 6          |  | 6          | 27         | 0         |  |
| 3 axle             |  | 0         | 3          | 0         |  | 0         | 3          | 3          |  | 0         | 8          | 0          |  | 4          | 7          | 1         |  |
| PCI                |  | 0         | 6          | 0         |  | 0         | 6          | 6          |  | 0         | 16         | 0          |  | 8          | 14         | 2         |  |
| 4+ axle            |  | 4         | 9          | 1         |  | 0         | 6          | 8          |  | 8         | 14         | 0          |  | 2          | 16         | 1         |  |
| PCI                |  | 12        | 27         | 3         |  | 0         | 18         | 24         |  | 24        | 42         | 0          |  | 6          | 48         | 3         |  |
| <b>Total (PCI)</b> |  | <b>73</b> | <b>195</b> | <b>29</b> |  | <b>48</b> | <b>297</b> | <b>118</b> |  | <b>75</b> | <b>362</b> | <b>109</b> |  | <b>104</b> | <b>610</b> | <b>55</b> |  |

**PM**

**Cherry Ave. at Arrow Rt.**

|                          | EB |           |            |           | WB |           |            |           | NB |            |            |            | SB |           |            | Total     |     |
|--------------------------|----|-----------|------------|-----------|----|-----------|------------|-----------|----|------------|------------|------------|----|-----------|------------|-----------|-----|
|                          | Rt | Th        | Lt         |           | Rt | Th        | Lt         |           | Rt | Th         | Lt         |            | Rt | Th        | Lt         |           |     |
| 4:15                     |    | 26        | 95         | 22        |    | 19        | 57         | 26        |    | 30         | 145        | 33         |    | 20        | 115        | 13        | 601 |
| 4:30                     |    | 16        | 91         | 17        |    | 19        | 63         | 25        |    | 17         | 168        | 27         |    | 17        | 138        | 22        | 620 |
| 4:45                     |    | 30        | 108        | 28        |    | 17        | 62         | 16        |    | 24         | 160        | 35         |    | 9         | 108        | 22        | 619 |
| 5:00                     |    | 23        | 84         | 20        |    | 13        | 59         | 32        |    | 29         | 171        | 28         |    | 12        | 101        | 17        | 589 |
| <b>Total Veh + Truck</b> |    | <b>95</b> | <b>378</b> | <b>87</b> |    | <b>68</b> | <b>241</b> | <b>99</b> |    | <b>100</b> | <b>644</b> | <b>123</b> |    | <b>58</b> | <b>462</b> | <b>74</b> |     |
| <b>Veh Only</b>          |    | <b>90</b> | <b>365</b> | <b>84</b> |    | <b>63</b> | <b>232</b> | <b>78</b> |    | <b>89</b>  | <b>603</b> | <b>117</b> |    | <b>53</b> | <b>410</b> | <b>69</b> |     |
| <b>Trucks</b>            |    |           | 1.086694   |           |    |           | 0.871495   |           |    |            | 0.954009   |            |    |           | 0.751412   |           |     |

|                    |  |            |            |           |  |           |            |            |  |            |            |            |  |           |            |           |  |
|--------------------|--|------------|------------|-----------|--|-----------|------------|------------|--|------------|------------|------------|--|-----------|------------|-----------|--|
| 2 axle             |  | 2          | 10         | 3         |  | 3         | 6          | 9          |  | 7          | 21         | 5          |  | 2         | 24         | 4         |  |
| PCI                |  | 3          | 15         | 4.5       |  | 4.5       | 9          | 13.5       |  | 10.5       | 0          | 7.5        |  | 3         | 36         | 6         |  |
| 3 axle             |  | 1          | 1          | 0         |  | 0         | 2          | 6          |  | 0          | 8          | 1          |  | 3         | 17         | 0         |  |
| PCI                |  | 2          | 2          | 0         |  | 0         | 4          | 12         |  | 0          | 16         | 2          |  | 6         | 34         | 0         |  |
| 4+ axle            |  | 2          | 2          | 0         |  | 2         | 1          | 6          |  | 4          | 12         | 0          |  | 0         | 11         | 1         |  |
| PCI                |  | 6          | 6          | 0         |  | 6         | 3          | 18         |  | 12         | 36         | 0          |  | 0         | 33         | 3         |  |
| <b>Total (PCI)</b> |  | <b>101</b> | <b>388</b> | <b>89</b> |  | <b>74</b> | <b>248</b> | <b>122</b> |  | <b>112</b> | <b>655</b> | <b>127</b> |  | <b>62</b> | <b>513</b> | <b>78</b> |  |

**SAN BERNARDINO AVE. @ ALABAMA ST.  
SAN BERNARDINO COUNTY**

**PUBLIC WORKS      File Name : CHERRY@ARROW120424  
TRAFFIC DIVISION    Site Code : 00000000  
Start Date : 04/24/2012  
Page No : 1**

Groups Printed- Unshifted

| Start Time  | CHERRY AVE.<br>Northbound |      |      |      | CHERRY AVE.<br>Southbound |      |      |      | ARROW RTE.<br>Eastbound |      |      |      | ARROW RTE.<br>Westbound |      |      |      | Int. Total |      |
|-------------|---------------------------|------|------|------|---------------------------|------|------|------|-------------------------|------|------|------|-------------------------|------|------|------|------------|------|
|             | Right                     | Thru | Left | Peds | Right                     | Thru | Left | Peds | Right                   | Thru | Left | Peds | Right                   | Thru | Left | Peds |            |      |
| Factor      | 1.0                       | 1.0  | 1.0  | 1.0  | 1.0                       | 1.0  | 1.0  | 1.0  | 1.0                     | 1.0  | 1.0  | 1.0  | 1.0                     | 1.0  | 1.0  | 1.0  | 1.0        |      |
| 07:00 AM    | 11                        | 79   | 16   | 0    | 12                        | 147  | 10   | 0    | 19                      | 37   | 6    | 0    | 9                       | 48   | 27   | 0    |            | 421  |
| 07:15 AM    | 9                         | 84   | 24   | 0    | 15                        | 131  | 7    | 0    | 11                      | 43   | 5    | 0    | 13                      | 57   | 22   | 0    |            | 421  |
| 07:30 AM    | 17                        | 88   | 35   | 2    | 29                        | 142  | 11   | 2    | 17                      | 42   | 7    | 0    | 5                       | 82   | 31   | 0    |            | 510  |
| 07:45 AM    | 7                         | 93   | 20   | 0    | 33                        | 171  | 15   | 0    | 16                      | 46   | 7    | 1    | 14                      | 81   | 19   | 0    |            | 523  |
| Total       | 44                        | 344  | 95   | 2    | 89                        | 591  | 43   | 2    | 63                      | 168  | 25   | 1    | 41                      | 268  | 99   | 0    |            | 1875 |
| 08:00 AM    | 23                        | 87   | 28   | 0    | 17                        | 118  | 19   | 0    | 21                      | 40   | 8    | 0    | 13                      | 58   | 24   | 0    |            | 456  |
| 08:15 AM    | 11                        | 62   | 29   | 1    | 24                        | 94   | 17   | 0    | 26                      | 43   | 14   | 0    | 11                      | 55   | 18   | 0    |            | 405  |
| 08:30 AM    | 16                        | 87   | 21   | 0    | 16                        | 93   | 5    | 0    | 17                      | 45   | 8    | 1    | 11                      | 73   | 15   | 1    |            | 409  |
| 08:45 AM    | 15                        | 77   | 17   | 0    | 13                        | 82   | 17   | 0    | 15                      | 33   | 6    | 0    | 12                      | 47   | 21   | 1    |            | 356  |
| Total       | 65                        | 313  | 95   | 1    | 70                        | 387  | 58   | 0    | 79                      | 161  | 36   | 1    | 47                      | 233  | 78   | 2    |            | 1626 |
| 04:00 PM    | 24                        | 160  | 24   | 0    | 13                        | 101  | 19   | 0    | 14                      | 75   | 16   | 0    | 20                      | 53   | 15   | 0    |            | 534  |
| 04:15 PM    | 30                        | 145  | 33   | 0    | 20                        | 115  | 13   | 0    | 26                      | 95   | 22   | 0    | 19                      | 57   | 26   | 1    |            | 602  |
| 04:30 PM    | 17                        | 168  | 27   | 0    | 17                        | 138  | 22   | 0    | 16                      | 91   | 17   | 0    | 19                      | 63   | 25   | 0    |            | 620  |
| 04:45 PM    | 24                        | 160  | 35   | 1    | 9                         | 108  | 22   | 0    | 30                      | 108  | 28   | 0    | 17                      | 62   | 16   | 0    |            | 620  |
| Total       | 95                        | 633  | 119  | 1    | 59                        | 462  | 76   | 0    | 86                      | 369  | 83   | 0    | 75                      | 235  | 82   | 1    |            | 2376 |
| 05:00 PM    | 29                        | 171  | 28   | 0    | 12                        | 101  | 17   | 1    | 23                      | 84   | 20   | 0    | 13                      | 59   | 32   | 0    |            | 590  |
| 05:15 PM    | 27                        | 173  | 30   | 0    | 12                        | 87   | 9    | 0    | 18                      | 107  | 23   | 0    | 15                      | 57   | 17   | 1    |            | 576  |
| 05:30 PM    | 17                        | 129  | 35   | 0    | 10                        | 99   | 23   | 0    | 27                      | 78   | 20   | 0    | 23                      | 58   | 21   | 0    |            | 540  |
| 05:45 PM    | 20                        | 152  | 20   | 0    | 13                        | 72   | 13   | 0    | 21                      | 77   | 27   | 0    | 18                      | 42   | 23   | 0    |            | 498  |
| Total       | 93                        | 625  | 113  | 0    | 47                        | 359  | 62   | 1    | 89                      | 346  | 90   | 0    | 69                      | 216  | 93   | 1    |            | 2204 |
| Grand Total | 297                       | 1915 | 422  | 4    | 265                       | 1799 | 239  | 3    | 317                     | 1044 | 234  | 2    | 232                     | 952  | 352  | 4    |            | 8081 |
| Apprch %    | 11.3                      | 72.6 | 16.0 | 0.2  | 11.5                      | 78.0 | 10.4 | 0.1  | 19.8                    | 65.4 | 14.7 | 0.1  | 15.1                    | 61.8 | 22.9 | 0.3  |            |      |
| Total %     | 3.7                       | 23.7 | 5.2  | 0.0  | 3.3                       | 22.3 | 3.0  | 0.0  | 3.9                     | 12.9 | 2.9  | 0.0  | 2.9                     | 11.8 | 4.4  | 0.0  |            |      |

| Start Time  | CHERRY AVE.<br>Northbound |       |      |       |            | CHERRY AVE.<br>Southbound |       |      |       |            | ARROW RTE.<br>Eastbound |       |      |       |            | ARROW RTE.<br>Westbound |       |      |       |            | Int. Total |
|---|---------------------------|-------|------|-------|------------|---------------------------|-------|------|-------|------------|-------------------------|-------|------|-------|------------|-------------------------|-------|------|-------|------------|------------|
|   | Rig ht                    | Thr u | Left | Ped s | App. Total | Rig ht                    | Thr u | Left | Ped s | App. Total | Rig ht                  | Thr u | Left | Ped s | App. Total | Rig ht                  | Thr u | Left | Ped s | App. Total |            |
| Peak Hour From 07:00 AM to 12:30 PM - Peak 1 of 1 |                           |       |      |       |            |                           |       |      |       |            |                         |       |      |       |            |                         |       |      |       |            |            |
| Intersection                                      | 07:15 AM                  |       |      |       |            |                           |       |      |       |            |                         |       |      |       |            |                         |       |      |       |            |            |
| Volume  | 56                        | 352   | 107  | 2     | 517        | 94                        | 562   | 52   | 2     | 710        | 65                      | 171   | 27   | 1     | 264        | 45                      | 278   | 96   | 0     | 419        | 1910       |
| Percent   | 10.8                      | 68.1  | 20.7 | 0.4   |            | 13.2                      | 79.2  | 7.3  | 0.3   |            | 24.6                    | 64.8  | 10.2 | 0.4   |            | 10.7                    | 66.3  | 22.9 | 0.0   |            |            |
| Volume  | 7                         | 93    | 20   | 0     | 120        | 33                        | 171   | 15   | 0     | 219        | 16                      | 46    | 7    | 1     | 70         | 14                      | 81    | 19   | 0     | 114        | 523        |
| Peak Factor                                       |                           |       |      |       |            |                           |       |      |       |            |                         |       |      |       |            |                         |       |      |       |            | 0.913      |
| High Int.   | 07:30 AM                  |       |      |       |            | 07:45 AM                  |       |      |       |            | 07:45 AM                |       |      |       |            | 07:30 AM                |       |      |       |            |            |
| Volume  | 17                        | 88    | 35   | 2     | 142        | 33                        | 171   | 15   | 0     | 219        | 16                      | 46    | 7    | 1     | 70         | 5                       | 82    | 31   | 0     | 118        |            |
| Peak Factor                                       | 0.910                     |       |      |       |            | 0.811                     |       |      |       |            | 0.943                   |       |      |       |            | 0.888                   |       |      |       |            |            |
| Peak Hour From 12:45 PM to 05:45 PM - Peak 1 of 1 |                           |       |      |       |            |                           |       |      |       |            |                         |       |      |       |            |                         |       |      |       |            |            |
| Intersection                                      | 04:15 PM                  |       |      |       |            |                           |       |      |       |            |                         |       |      |       |            |                         |       |      |       |            |            |
| Volume  | 100                       | 644   | 123  | 1     | 868        | 58                        | 462   | 74   | 1     | 595        | 95                      | 378   | 87   | 0     | 560        | 68                      | 241   | 99   | 1     | 409        | 2432       |
| Percent   | 11.5                      | 74.2  | 14.2 | 0.1   |            | 9.7                       | 77.6  | 12.4 | 0.2   |            | 17.0                    | 67.5  | 15.5 | 0.0   |            | 16.6                    | 58.9  | 24.2 | 0.2   |            |            |
| Volume  | 24                        | 160   | 35   | 1     | 220        | 9                         | 108   | 22   | 0     | 139        | 30                      | 108   | 28   | 0     | 166        | 17                      | 62    | 16   | 0     | 95         | 620        |
| Peak Factor                                       |                           |       |      |       |            |                           |       |      |       |            |                         |       |      |       |            |                         |       |      |       |            | 0.981      |
| High Int.   | 05:00 PM                  |       |      |       |            | 04:30 PM                  |       |      |       |            | 04:45 PM                |       |      |       |            | 04:30 PM                |       |      |       |            |            |
| Volume  | 29                        | 171   | 28   | 0     | 228        | 17                        | 138   | 22   | 0     | 177        | 30                      | 108   | 28   | 0     | 166        | 19                      | 63    | 25   | 0     | 107        |            |
| Peak Factor                                       | 0.952                     |       |      |       |            | 0.840                     |       |      |       |            | 0.843                   |       |      |       |            | 0.956                   |       |      |       |            |            |

SAN BERNARDINO COUNTY  
 Department Of Public works  
 Traffic Division

COMMERCIAL TRUCK COUNT

LOCATION: Cherry Ave @ Arrow Rt  
 Cherry Ave.

COUNT BY: David Tran & Jorge Vela  
 DATE: 4/24/2012

| TIME         | TYPE     | NB RT | NB THRU | NB LT | SB RT | SB THRU | SB LT | EB RT | EB THRU | EB LT | WB RT | WB THRU | WB LT |
|--------------|----------|-------|---------|-------|-------|---------|-------|-------|---------|-------|-------|---------|-------|
| 7:00-7:15 AM | 2-AXLE   | 2     | 8       |       |       | 7       |       |       | 2       |       | 1     |         | 2     |
|              | 3-AXLE   | 2     | 4       | 1     |       | 2       | 1     |       | 1       | 1     |       | 3       |       |
|              | 4-AXLE   |       |         |       |       |         |       |       |         |       |       |         |       |
|              | 5-AXLE + |       | 2       |       |       | 3       |       | 1     |         |       |       | 1       | 1     |

|              |          |   |   |   |   |   |   |   |   |   |   |   |   |
|--------------|----------|---|---|---|---|---|---|---|---|---|---|---|---|
| 7:15-7:30 AM | 2-AXLE   |   | 6 |   |   | 2 |   |   | 1 |   | 1 | 1 | 1 |
|              | 3-AXLE   |   | 1 |   | 1 |   |   |   | 1 |   |   |   |   |
|              | 4-AXLE   |   |   |   |   |   |   |   |   |   |   |   |   |
|              | 5-AXLE + | 1 | 2 |   |   | 5 |   |   | 2 |   |   | 1 | 1 |
| 7:30-7:45 AM | 2-AXLE   | 3 | 6 |   |   | 3 |   |   | 2 |   | 2 | 1 | 1 |
|              | 3-AXLE   |   | 3 |   | 1 | 5 | 1 |   | 2 |   |   | 1 | 1 |
|              | 4-AXLE   |   |   |   |   |   |   |   |   |   |   |   |   |
|              | 5-AXLE + | 2 | 2 |   |   | 3 | 1 |   |   | 1 |   | 4 | 2 |
| 7:45-8:00 AM | 2-AXLE   |   | 7 | 1 | 4 | 8 |   |   | 1 |   | 2 | 2 | 3 |
|              | 3-AXLE   |   | 4 |   |   | 1 |   |   |   |   |   | 1 | 1 |
|              | 4-AXLE   |   |   |   |   | 1 |   |   | 1 |   |   | 1 |   |
|              | 5-AXLE + | 1 | 4 |   | 1 | 3 |   |   | 4 |   |   |   | 4 |
| 8:00-8:15 AM | 2-AXLE   | 2 | 7 | 3 |   | 5 |   |   | 1 |   |   | 4 | 1 |
|              | 3-AXLE   |   |   |   | 2 | 1 |   |   |   |   |   | 1 | 1 |
|              | 4-AXLE   |   |   |   |   |   |   |   | 1 |   |   |   |   |
|              | 5-AXLE + | 4 | 6 |   | 1 | 4 |   | 4 | 1 |   |   |   | 1 |

|              |          |   |    |   |   |   |   |   |   |   |   |   |   |
|--------------|----------|---|----|---|---|---|---|---|---|---|---|---|---|
| 8:15-8:30 AM | 2-AXLE   | 1 | 8  | 2 |   | 6 |   | 1 | 2 |   |   |   | 2 |
|              | 3-AXLE   |   |    |   | 1 | 4 |   |   |   |   |   |   | 2 |
|              | 4-AXLE   |   |    |   |   | 1 |   |   |   |   |   |   |   |
|              | 5-AXLE + | 2 | 5  |   |   | 6 |   | 2 | 1 |   |   |   | 1 |
| 8:30-8:45 AM | 2-AXLE   | 4 | 9  | 2 |   | 6 |   |   | 2 |   |   | 2 | 2 |
|              | 3-AXLE   | 2 | 1  |   | 1 | 2 |   | 1 |   |   |   | 1 | 1 |
|              | 4-AXLE   | 1 |    |   |   |   |   |   |   |   |   | 1 |   |
|              | 5-AXLE + | 1 | 2  | 1 |   | 3 |   | 1 | 1 |   | 1 |   | 1 |
| 8:45-9:00 AM | 2-AXLE   | 1 | 10 |   | 3 | 7 |   | 1 | 2 | 1 | 1 | 2 | 5 |
|              | 3-AXLE   |   | 1  |   |   | 2 |   |   |   |   |   |   |   |
|              | 4-AXLE   |   |    |   |   |   |   |   |   |   |   |   |   |
|              | 5-AXLE + |   | 6  | 2 |   | 2 | 1 | 2 | 1 |   | 1 |   | 3 |

| TIME         | TYPE     | NB RT | NB THRU | NB LT | SB RT | SB THRU | SB LT | EB RT | EB THRU | EB LT | WB RT | WB THRU | WB LT |
|--------------|----------|-------|---------|-------|-------|---------|-------|-------|---------|-------|-------|---------|-------|
| 4:00-4:15 PM | 2-AXLE   | 1     | 5       | 1     |       | 2       |       | 3     | 1       |       | 2     | 3       | 1     |
|              | 3-AXLE   |       | 5       |       |       | 7       |       | 1     | 2       |       |       | 1       |       |
|              | 4-AXLE   |       |         |       |       |         |       |       |         |       |       |         |       |
|              | 5-AXLE + | 2     | 4       |       |       | 2       |       |       | 1       | 1     |       | 1       |       |

|              |          |   |   |   |   |   |   |   |   |   |   |   |   |
|--------------|----------|---|---|---|---|---|---|---|---|---|---|---|---|
| 4:15-4:30 PM | 2-AXLE   | 3 | 6 | 1 |   | 6 | 1 | 1 | 1 |   |   | 2 | 2 |
|              | 3-AXLE   |   | 1 | 1 | 3 | 9 |   | 1 |   |   |   | 2 | 1 |
|              | 4-AXLE   |   | 1 |   |   |   |   |   |   |   |   |   |   |
|              | 5-AXLE + | 1 | 3 |   |   | 5 |   | 1 | 1 |   | 1 | 1 | 2 |
| 4:30-4:45 PM | 2-AXLE   | 1 | 3 | 1 |   | 5 | 3 | 1 | 3 | 1 | 1 |   | 2 |
|              | 3-AXLE   |   | 2 |   |   | 5 |   |   |   |   |   |   | 3 |
|              | 4-AXLE   |   |   |   |   |   |   |   |   |   |   |   |   |
|              | 5-AXLE + | 3 | 3 |   |   | 2 |   |   |   |   |   |   | 2 |
| 4:45-5:00 PM | 2-AXLE   | 1 | 4 | 1 | 1 | 9 |   |   | 4 | 1 | 1 | 3 | 2 |
|              | 3-AXLE   |   | 2 |   |   | 2 |   |   | 1 |   |   |   |   |
|              | 4-AXLE   |   |   |   |   |   |   |   |   |   |   |   | 1 |
|              | 5-AXLE + | 1 | 1 |   |   | 1 |   |   |   |   |   |   | 1 |
| 5:00-5:15 PM | 2-AXLE   | 2 | 8 | 2 | 1 | 4 |   |   | 2 | 1 | 2 | 1 | 3 |
|              | 3-AXLE   |   | 3 |   |   | 1 |   |   |   |   |   |   | 2 |
|              | 4-AXLE   |   |   |   |   |   |   |   |   |   |   |   |   |
|              | 5-AXLE + |   | 4 |   |   | 3 | 1 | 1 | 1 |   | 1 |   |   |

|              |          |   |   |   |   |   |   |   |   |   |   |   |   |
|--------------|----------|---|---|---|---|---|---|---|---|---|---|---|---|
| 5:15-5:30 PM | 2-AXLE   | 3 | 2 | 2 | 1 | 4 | 1 | 1 | 3 |   | 1 |   |   |
|              | 3-AXLE   | 2 | 1 |   |   |   |   |   |   |   |   |   |   |
|              | 4-AXLE   |   |   |   |   |   |   |   |   |   |   |   |   |
|              | 5-AXLE + | 2 | 6 |   |   |   |   |   | 1 | 1 |   |   | 1 |
| 5:30-5:45 PM | 2-AXLE   | 1 | 4 | 1 |   | 3 |   |   | 2 |   | 3 | 4 | 1 |
|              | 3-AXLE   |   | 2 |   |   | 2 |   |   |   |   |   |   |   |
|              | 4-AXLE   |   |   |   |   |   |   |   |   |   |   |   |   |
|              | 5-AXLE + |   | 2 |   |   | 4 |   | 1 |   | 2 |   |   | 2 |
| 5:45-6:00 PM | 2-AXLE   | 1 | 3 |   | 1 | 4 |   |   | 2 |   |   |   | 1 |
|              | 3-AXLE   |   | 1 |   |   |   |   | 1 |   |   |   |   |   |
|              | 4-AXLE   |   |   |   |   |   |   |   |   |   |   |   |   |
|              | 5-AXLE + | 1 | 2 |   |   | 3 |   |   |   |   |   |   | 1 |

**WEBSTER**  
**Webster Based Signal Timing Evaluation Routine**  
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

**Etiwanda Avenue at San Bernardino/4th AM**

**Etiwanda Ave at San**

**County of San Bernardino**

**AM Peak Hour**

Parameter Values (using default set 'SANBAG (Existing)')

| Parameter                     | Other | Default | Min. Time Parameter         | Other  | Default | Sat. Flow Parameter           | Other | Default |
|-------------------------------|-------|---------|-----------------------------|--------|---------|-------------------------------|-------|---------|
| Duration of Peak Period (min) |       | 15      | Min. Time (Left Turns, sec) |        | 10      | Sat Flow (1 Left lane, vphg)  | 1700  | 1800    |
| Lost Time (sec)               |       | 2       | Min/Ped Time (Thrus, sec)   | Varies | Varies  | Sat Flow (2 Left lanes, vphg) | 3200  | 3500    |
| Vehicle Length (feet)         |       | 20      |                             |        |         | Sat Flow (1 Thru lane, vphg)  | 1800  | 1900    |
|                               |       |         |                             |        |         | Sat Flow (1 Right lane, vphg) |       | 1800    |

Input Values

| Movement Times                | Eastbound |      |      | Westbound |      |      | Northbound |      |      | Southbound |      |      |
|-------------------------------|-----------|------|------|-----------|------|------|------------|------|------|------------|------|------|
|                               | L         | T    | R    | *L*       | *T*  | R    | *L*        | T    | R    | L          | *T*  | R    |
| Movement 1: 12 secs           | X         |      |      | X         |      |      |            |      |      |            |      |      |
| Movement 2: 16 secs           |           | X    | X    |           | X    | X    |            |      |      |            |      |      |
| Movement 3: 21 secs           |           |      |      |           |      |      | X          |      |      | X          |      |      |
| Movement 4: 71 secs           |           |      |      |           |      |      |            | X    | X    |            | X    | X    |
| Movement 5: 0 secs            |           |      |      |           |      |      |            |      |      |            |      |      |
| Movement 6: 0 secs            |           |      |      |           |      |      |            |      |      |            |      |      |
| # of Lanes (#, S, P)          | 2         | 2    | 1    | 2         | 2    | S    | 2          | 2    | 1    | 2          | 2    | 1    |
| Unadjusted Volume             | 89        | 161  | 80   | 107       | 136  | 36   | 183        | 557  | 10   | 50         | 730  | 79   |
| Peak Hour Factor (PHF)        | 0.66      | 0.66 | 0.66 | 0.68      | 0.68 | 0.68 | 0.60       | 0.60 | 0.60 | 0.58       | 0.58 | 0.58 |
| Min/Ped Time Override (sec)   | 10        | 34   | 34   | 10        | 34   | 34   | 10         | 31   | 31   | 10         | 31   | 31   |
| Progression Adj. Factor (PAF) | 1.00      | 1.00 | 1.00 | 1.00      | 1.00 | -    | 1.00       | 1.00 | 1.00 | 1.00       | 1.00 | 1.00 |

Output

|                              | ***  |      |      | ***  |      |      | ***  |      |      | ***  |      |      |
|------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Peak Hour Volume (vph)       | 135  | 244  | 121  | 157  | 200  | 53   | 305  | 928  | 17   | 86   | 1259 | 136  |
| Saturation Flow (vph)        | 3200 | 3600 | 1800 | 3200 | 3600 | Shrd | 3200 | 3600 | 1800 | 3200 | 3600 | 1800 |
| X or Volume/Capacity         | 0.51 | 0.58 | 0.58 | 0.59 | 0.60 | -    | 0.60 | 0.45 | 0.02 | 0.17 | 0.61 | 0.13 |
| Effective Green (sec)        | 10   | 14   | 14   | 10   | 14   | -    | 19   | 69   | 69   | 19   | 69   | 69   |
| Split Time (sec)             | 12   | 16   | 16   | 12   | 16   | -    | 21   | 71   | 71   | 21   | 71   | 71   |
| Min. Time or Ped. Time (sec) | 10   | 34   | 34   | 10   | 34   | -    | 10   | 31   | 31   | 10   | 31   | 31   |
| Delay - 15 min pk (sec/veh)  | 59   | 56   | 61   | 62   | 57   | -    | 52   | 15   | 11   | 44   | 18   | 12   |
| Level of Service (LOS)       | E+   | E+   | E    | E    | E+   | -    | D-   | B    | B    | D    | B    | B    |
| Average 'Q' (veh/ln)         | 2    | 4    | 4    | 2    | 4    | -    | 4    | 7    | 1    | 1    | 9    | 2    |
| Design 'Q'-ft/ln (1.5*Qavg)  | 60   | 120  | 120  | 60   | 120  | -    | 120  | 220  | 40   | 40   | 280  | 60   |
| Do Vehicles Clear?           | YES  | YES  | YES  | YES  | YES  | -    | YES  | YES  | YES  | YES  | YES  | YES  |

Summary of Results

| Whole Intersection  | Critical Movements  |
|---|---|
| Weighted Average Delay (seconds) = 31<br>Level of Service - LOS = C-          | Weighted Average Delay (seconds) = 32<br>Level of Service - LOS = C-<br>Capacity Utilization - ICU/TCU = 0.60 |
| Predetermined Cycle Length is 120 sec<br>Min./Ped. Times May Not Be Satisfied |   |

**WEBSTER**  
**WEBster Based Signal Timing Evaluation Routine**  
For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

**Etiwanda Avenue at San Bernardino/4th PM**

**Etiwanda Ave at San**

**County of San Bernardino**

**PM Peak Hour**

Parameter Values (using default set 'SANBAG (Existing)')

| Parameter                     | Other | Default | Min. Time Parameter         | Other  | Default | Sat. Flow Parameter           | Other | Default |
|-------------------------------|-------|---------|-----------------------------|--------|---------|-------------------------------|-------|---------|
| Duration of Peak Period (min) |       | 15      | Min. Time (Left Turns, sec) |        | 10      | Sat Flow (1 Left lane, vphg)  | 1700  | 1800    |
| Lost Time (sec)               |       | 2       | Min/Ped Time (Thrus, sec)   | Varies | Varies  | Sat Flow (2 Left lanes, vphg) | 3200  | 3500    |
| Vehicle Length (feet)         |       | 20      |                             |        |         | Sat Flow (1 Thru lane, vphg)  | 1800  | 1900    |
|                               |       |         |                             |        |         | Sat Flow (1 Right lane, vphg) |       | 1800    |

Input Values

| Movement Times                | Eastbound |      |      | Westbound |      |      | Northbound |      |      | Southbound |      |      |
|-------------------------------|-----------|------|------|-----------|------|------|------------|------|------|------------|------|------|
|                               | *L*       | T    | R    | L         | *T*  | R    | *L*        | *T*  | R    | L          | T    | R    |
| Movement 1: 12 secs           | X         |      |      | X         |      |      |            |      |      |            |      |      |
| Movement 2: 34 secs           |           | X    | X    |           | X    | X    |            |      |      |            |      |      |
| Movement 3: 11 secs           |           |      |      |           |      |      | X          |      |      | X          |      |      |
| Movement 4: 32 secs           |           |      |      |           |      |      |            | X    | X    |            | X    | X    |
| Movement 5: 0 secs            |           |      |      |           |      |      |            |      |      |            |      |      |
| Movement 6: 0 secs            |           |      |      |           |      |      |            |      |      |            |      |      |
| # of Lanes (#, S, P)          | 2         | 2    | 1    | 2         | 2    | S    | 2          | 2    | 1    | 2          | 2    | 1    |
| Unadjusted Volume             | 270       | 494  | 247  | 132       | 294  | 76   | 201        | 781  | 10   | 121        | 545  | 49   |
| Peak Hour Factor (PHF)        | 1.00      | 1.00 | 1.00 | 0.66      | 0.66 | 0.66 | 0.80       | 0.80 | 0.80 | 0.78       | 0.78 | 0.78 |
| Min/Ped Time Override (sec)   | 10        | 34   | 34   | 10        | 34   | 34   | 10         | 31   | 31   | 10         | 31   | 31   |
| Progression Adj. Factor (PAF) | 1.00      | 1.00 | 1.00 | 1.00      | 1.00 | -    | 1.00       | 1.00 | 1.00 | 1.00       | 1.00 | 1.00 |

Output

|                              | ***  |      |      | ***  |      |      | ***  |      |      | ***  |      |      |
|------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Peak Hour Volume (vph)       | 270  | 494  | 247  | 200  | 445  | 115  | 251  | 976  | 12   | 155  | 699  | 63   |
| Saturation Flow (vph)        | 3200 | 3600 | 1800 | 3200 | 3600 | Shrd | 3200 | 3600 | 1800 | 3200 | 3600 | 1800 |
| X or Volume/Capacity         | 0.75 | 0.38 | 0.38 | 0.56 | 0.43 | -    | 0.78 | 0.80 | 0.02 | 0.48 | 0.58 | 0.10 |
| Effective Green (sec)        | 10   | 32   | 32   | 10   | 32   | -    | 9    | 30   | 30   | 9    | 30   | 30   |
| Split Time (sec)             | 12   | 34   | 34   | 12   | 34   | -    | 11   | 32   | 32   | 11   | 32   | 32   |
| Min. Time or Ped. Time (sec) | 10   | 34   | 34   | 10   | 34   | -    | 10   | 31   | 31   | 10   | 31   | 31   |
| Delay - 15 min pk (sec/veh)  | 52   | 22   | 23   | 43   | 23   | -    | 56   | 33   | 20   | 43   | 26   | 21   |
| Level of Service (LOS)       | D-   | C+   | C+   | D    | C+   | -    | E+   | C-   | B    | D    | C    | C+   |
| Average 'Q' (veh/ln)         | 3    | 4    | 4    | 2    | 4    | -    | 3    | 8    | 1    | 2    | 6    | 1    |
| Design 'Q'-ft/ln (1.5*Qavg)  | 100  | 120  | 120  | 60   | 120  | -    | 100  | 240  | 40   | 60   | 180  | 40   |
| Do Vehicles Clear?           | YES  | YES  | YES  | YES  | YES  | -    | YES  | YES  | YES  | YES  | YES  | YES  |

Summary of Results

| Whole Intersection   | Critical Movements  |
|--|---|
| Weighted Average Delay (seconds) = 32<br>Level of Service - LOS = C- | Weighted Average Delay (seconds) = 36<br>Level of Service - LOS = D+<br>Capacity Utilization - ICU/TCU = 0.65 |
| Required Cycle Length is 89 sec<br>Min./Ped. Times Satisfied         |   |

### PCI CALCULATION.

Intersection:

**Etiwanda @ San Bernardino**

Date:

5/1/2012

**AM**

| Time             | EB        |            |           | WB        |            |           | NB        |            |            | SB        |            |           | Total |
|------------------|-----------|------------|-----------|-----------|------------|-----------|-----------|------------|------------|-----------|------------|-----------|-------|
|                  | Rt        | Th         | Lt        | Rt        | Th         | Lt        | Rt        | Th         | Lt         | Rt        | Th         | Lt        |       |
| 7:30             | 17        | 30         | 19        | 5         | 36         | 23        | 14        | 95         | 25         | 22        | 162        | 7         | 455   |
| 7:45             | 13        | 44         | 23        | 8         | 36         | 19        | 20        | 118        | 50         | 32        | 195        | 13        | 571   |
| 8:00             | 16        | 36         | 17        | 4         | 27         | 14        | 11        | 123        | 32         | 7         | 118        | 5         | 410   |
| 8:15             | 13        | 20         | 16        | 10        | 21         | 15        | 11        | 96         | 27         | 13        | 102        | 14        | 358   |
| <b>Total Veh</b> | <b>59</b> | <b>130</b> | <b>75</b> | <b>27</b> | <b>120</b> | <b>71</b> | <b>56</b> | <b>432</b> | <b>134</b> | <b>74</b> | <b>577</b> | <b>39</b> |       |
| <b>Car Only</b>  | <b>40</b> | <b>107</b> | <b>65</b> | <b>17</b> | <b>106</b> | <b>49</b> | <b>29</b> | <b>320</b> | <b>100</b> | <b>67</b> | <b>464</b> | <b>27</b> |       |
| <b>Factor</b>    | 0.6625    |            |           | 0.68254   |            |           | 0.597074  |            |            | 0.58125   |            |           |       |

| Trucks             |           |            |           |           |            |            |            |            |            |           |            |           |  |
|--------------------|-----------|------------|-----------|-----------|------------|------------|------------|------------|------------|-----------|------------|-----------|--|
| 2 axle             | 10        | 7          | 2         | 5         | 7          | 4          | 5          | 23         | 11         | 4         | 28         | 6         |  |
| PCI                | 15        | 10.5       | 3         | 7.5       | 10.5       | 6          | 7.5        | 0          | 16.5       | 6         | 42         | 9         |  |
| 3 axle             | 2         | 5          | 3         | 4         | 2          | 2          | 3          | 30         | 3          | 3         | 31         | 4         |  |
| PCI                | 4         | 10         | 6         | 8         | 4          | 4          | 6          | 60         | 6          | 6         | 62         | 8         |  |
| 4+ axle            | 7         | 11         | 5         | 1         | 5          | 16         | 19         | 59         | 20         | 0         | 54         | 2         |  |
| PCI                | 21        | 33         | 15        | 3         | 15         | 48         | 57         | 177        | 60         | 0         | 162        | 6         |  |
| <b>Total (PCI)</b> | <b>80</b> | <b>161</b> | <b>89</b> | <b>36</b> | <b>136</b> | <b>107</b> | <b>100</b> | <b>557</b> | <b>183</b> | <b>79</b> | <b>730</b> | <b>50</b> |  |

**PM**

| Time             | EB         |            |            | WB        |            |           | NB         |            |            | SB        |            |           | Total |
|------------------|------------|------------|------------|-----------|------------|-----------|------------|------------|------------|-----------|------------|-----------|-------|
|                  | Rt         | Th         | Lt         | Rt        | Th         | Lt        | Rt         | Th         | Lt         | Rt        | Th         | Lt        |       |
| 4:30             | 46         | 104        | 44         | 21        | 87         | 28        | 46         | 184        | 35         | 13        | 119        | 19        | 746   |
| 4:45             | 62         | 108        | 43         | 17        | 59         | 23        | 36         | 139        | 54         | 11        | 112        | 19        | 683   |
| 5:00             | 54         | 106        | 77         | 11        | 65         | 19        | 36         | 168        | 38         | 6         | 125        | 23        | 728   |
| 5:15             | 48         | 117        | 86         | 14        | 58         | 17        | 16         | 207        | 27         | 12        | 111        | 8         | 721   |
| <b>Total Veh</b> | <b>210</b> | <b>435</b> | <b>250</b> | <b>63</b> | <b>269</b> | <b>87</b> | <b>134</b> | <b>698</b> | <b>154</b> | <b>42</b> | <b>467</b> | <b>69</b> |       |
| <b>Car Only</b>  | <b>184</b> | <b>392</b> | <b>234</b> | <b>55</b> | <b>245</b> | <b>57</b> | <b>102</b> | <b>625</b> | <b>122</b> | <b>38</b> | <b>410</b> | <b>21</b> |       |
| <b>Factor</b>    | 1.043814   |            |            | 0.65625   |            |           | 0.800943   |            |            | 0.77649   |            |           |       |

| Trucks             |            |            |            |           |            |            |            |            |            |           |            |            |  |
|--------------------|------------|------------|------------|-----------|------------|------------|------------|------------|------------|-----------|------------|------------|--|
| 2 axle             | 8          | 14         | 6          | 0         | 11         | 3          | 9          | 15         | 9          | 1         | 12         | 3          |  |
| PCI                | 12         | 21         | 9          | 0         | 16.5       | 4.5        | 13.5       | 0          | 13.5       | 1.5       | 18         | 4.5        |  |
| 3 axle             | 3          | 6          | 3          | 3         | 7          | 11         | 4          | 18         | 4          | 0         | 18         | 40         |  |
| PCI                | 6          | 12         | 6          | 6         | 14         | 22         | 8          | 36         | 8          | 0         | 36         | 80         |  |
| 4+ axle            | 15         | 23         | 7          | 5         | 6          | 16         | 19         | 40         | 19         | 3         | 27         | 5          |  |
| PCI                | 45         | 69         | 21         | 15        | 18         | 48         | 57         | 120        | 57         | 9         | 81         | 15         |  |
| <b>Total (PCI)</b> | <b>247</b> | <b>494</b> | <b>270</b> | <b>76</b> | <b>294</b> | <b>132</b> | <b>181</b> | <b>781</b> | <b>201</b> | <b>49</b> | <b>545</b> | <b>121</b> |  |

SAN BERNARDINO COUNTY

PUBLIC WORKS  
TRAFFIC DIVISION

File Name : ETIWANDA@SANB120501

Site Code : 00000000

Start Date : 05/01/2012

Page No : 1

Groups Printed- Unshifted

| Start Time  | ETIWANDA Northbound |      |      |      | ETIWANDA Southbound |      |      |      | SAN BERNARDINO Eastbound |      |      |      | SAN BERNARDINO Westbound |      |      |      | Int. Total |      |
|-------------|---------------------|------|------|------|---------------------|------|------|------|--------------------------|------|------|------|--------------------------|------|------|------|------------|------|
|             | Right               | Thru | Left | Peds | Right               | Thru | Left | Peds | Right                    | Thru | Left | Peds | Right                    | Thru | Left | Peds |            |      |
| Factor      | 1.0                 | 1.0  | 1.0  | 1.0  | 1.0                 | 1.0  | 1.0  | 1.0  | 1.0                      | 1.0  | 1.0  | 1.0  | 1.0                      | 1.0  | 1.0  | 1.0  | 1.0        |      |
| 07:00 AM    | 12                  | 78   | 25   | 0    | 6                   | 95   | 6    | 0    | 11                       | 31   | 18   | 2    | 6                        | 19   | 18   | 0    | 0          | 327  |
| 07:15 AM    | 14                  | 69   | 24   | 0    | 10                  | 133  | 6    | 1    | 9                        | 22   | 12   | 0    | 3                        | 27   | 19   | 0    | 0          | 349  |
| 07:30 AM    | 14                  | 95   | 25   | 0    | 22                  | 162  | 7    | 0    | 17                       | 30   | 19   | 0    | 5                        | 36   | 23   | 0    | 0          | 455  |
| 07:45 AM    | 20                  | 118  | 50   | 0    | 32                  | 195  | 13   | 2    | 13                       | 44   | 23   | 0    | 8                        | 36   | 19   | 0    | 0          | 573  |
| Total       | 60                  | 360  | 124  | 0    | 70                  | 585  | 32   | 3    | 50                       | 127  | 72   | 2    | 22                       | 118  | 79   | 0    | 0          | 1704 |
| 08:00 AM    | 11                  | 123  | 32   | 0    | 7                   | 118  | 5    | 0    | 16                       | 36   | 17   | 0    | 4                        | 27   | 14   | 0    | 0          | 410  |
| 08:15 AM    | 11                  | 96   | 27   | 1    | 13                  | 102  | 14   | 0    | 13                       | 20   | 16   | 0    | 10                       | 21   | 15   | 1    | 1          | 360  |
| 08:30 AM    | 15                  | 80   | 25   | 1    | 12                  | 88   | 11   | 0    | 12                       | 25   | 24   | 1    | 5                        | 24   | 22   | 0    | 0          | 345  |
| 08:45 AM    | 19                  | 93   | 16   | 0    | 17                  | 106  | 6    | 0    | 10                       | 16   | 15   | 0    | 7                        | 43   | 16   | 0    | 0          | 364  |
| Total       | 56                  | 392  | 100  | 2    | 49                  | 414  | 36   | 0    | 51                       | 97   | 72   | 1    | 26                       | 115  | 67   | 1    | 1          | 1479 |
| 04:00 PM    | 38                  | 151  | 29   | 0    | 22                  | 102  | 12   | 1    | 45                       | 137  | 62   | 1    | 15                       | 49   | 26   | 0    | 0          | 690  |
| 04:15 PM    | 48                  | 152  | 36   | 0    | 14                  | 104  | 16   | 0    | 34                       | 126  | 32   | 0    | 8                        | 51   | 15   | 0    | 0          | 636  |
| 04:30 PM    | 46                  | 184  | 35   | 0    | 13                  | 119  | 19   | 1    | 46                       | 104  | 44   | 1    | 21                       | 87   | 28   | 0    | 0          | 748  |
| 04:45 PM    | 36                  | 139  | 54   | 0    | 11                  | 112  | 19   | 0    | 62                       | 108  | 43   | 0    | 17                       | 59   | 23   | 1    | 1          | 684  |
| Total       | 168                 | 626  | 154  | 0    | 60                  | 437  | 66   | 2    | 187                      | 475  | 181  | 2    | 61                       | 246  | 92   | 1    | 1          | 2758 |
| 05:00 PM    | 36                  | 168  | 38   | 0    | 6                   | 125  | 23   | 1    | 54                       | 106  | 77   | 0    | 11                       | 65   | 19   | 0    | 0          | 729  |
| 05:15 PM    | 16                  | 207  | 27   | 1    | 12                  | 111  | 8    | 1    | 48                       | 117  | 86   | 0    | 14                       | 58   | 17   | 1    | 1          | 724  |
| 05:30 PM    | 15                  | 147  | 34   | 0    | 13                  | 96   | 8    | 0    | 23                       | 83   | 70   | 0    | 5                        | 60   | 18   | 0    | 0          | 572  |
| 05:45 PM    | 13                  | 149  | 41   | 2    | 10                  | 81   | 10   | 1    | 14                       | 66   | 54   | 0    | 6                        | 50   | 24   | 0    | 0          | 521  |
| Total       | 80                  | 671  | 140  | 3    | 41                  | 413  | 49   | 3    | 139                      | 372  | 287  | 0    | 36                       | 233  | 78   | 1    | 1          | 2546 |
| Grand Total | 364                 | 2049 | 518  | 5    | 220                 | 1849 | 183  | 8    | 427                      | 1071 | 612  | 5    | 145                      | 712  | 316  | 3    | 3          | 8487 |
| Apprch %    | 12.4                | 69.8 | 17.6 | 0.2  | 9.7                 | 81.8 | 8.1  | 0.4  | 20.2                     | 50.6 | 28.9 | 0.2  | 12.3                     | 60.5 | 26.9 | 0.3  | 0.3        |      |
| Total %     | 4.3                 | 24.1 | 6.1  | 0.1  | 2.6                 | 21.8 | 2.2  | 0.1  | 5.0                      | 12.6 | 7.2  | 0.1  | 1.7                      | 8.4  | 3.7  | 0.0  | 0.0        |      |

SAN BERNARDINO COUNTY  
 Department Of Public works  
 Traffic Division

COMMERCIAL TRUCK COUNT

COUNT BY: David Tran & Jorge Vela

LOCATION: Etiwanda Ave. @ San Bernardino Ave.

DATE: 5/1/2012

Etiwanda Ave. Etiwanda Ave. San Bernardino Ave. San Bernardino Ave.

| TIME         | TYPE     | NB RT | NB THRU | NB LT | SB RT | SB THRU | SB LT | EB RT | EB THRU | EB LT | WB RT | WB THRU | WB LT |
|--------------|----------|-------|---------|-------|-------|---------|-------|-------|---------|-------|-------|---------|-------|
| 7:00-7:15 AM | 2-AXLE   |       | 2       |       | 1     | 1       |       |       | 2       |       | 1     | 4       |       |
|              | 3-AXLE   |       | 1       |       |       | 2       |       |       |         | 1     | 1     |         | 2     |
|              | 4-AXLE   |       | 1       |       |       |         |       |       |         |       |       |         |       |
|              | 5-AXLE + | 2     | 10      | 4     | 1     | 14      | 1     | 2     | 5       | 1     |       | 1       | 4     |
| 7:15-7:30 AM | 2-AXLE   |       | 2       |       |       | 1       |       |       | 2       | 1     |       |         |       |
|              | 3-AXLE   | 1     | 6       | 1     |       | 3       | 1     | 1     | 1       |       |       |         | 2     |
|              | 4-AXLE   | 1     |         |       |       |         |       |       |         |       |       |         |       |
|              | 5-AXLE + | 3     | 12      | 3     | 1     | 10      | 1     | 3     | 2       |       |       | 3       | 4     |

|              |          |   |    |   |   |    |   |   |   |   |   |   |   |
|--------------|----------|---|----|---|---|----|---|---|---|---|---|---|---|
| 7:30-7:45 AM | 2-AXLE   | 1 | 3  | 1 | 2 | 5  | 1 | 2 | 1 | 1 |   | 2 |   |
|              | 3-AXLE   | 2 | 5  | 2 | 2 | 7  |   | 1 |   | 3 | 1 | 1 |   |
|              | 4-AXLE   |   |    |   |   | 4  |   |   |   |   |   |   |   |
|              | 5-AXLE + | 6 | 12 | 4 |   | 14 | 1 | 1 | 2 | 2 |   |   | 3 |
| 7:45-8:00 AM | 2-AXLE   | 1 | 4  | 3 |   | 10 |   | 4 | 2 | 1 | 2 | 3 | 1 |
|              | 3-AXLE   | 1 | 12 |   | 1 | 7  |   |   | 3 |   |   | 1 | 1 |
|              | 4-AXLE   |   | 1  |   |   | 1  |   | 1 |   |   |   |   |   |
|              | 5-AXLE + | 2 | 10 | 4 |   | 14 |   | 2 | 3 | 1 | 1 | 3 | 3 |
| 8:00-8:15 AM | 2-AXLE   | 2 | 10 | 2 |   | 8  |   | 3 | 3 |   |   | 1 | 2 |
|              | 3-AXLE   |   | 9  |   |   | 9  | 3 | 1 | 2 |   |   |   |   |
|              | 4-AXLE   |   | 1  |   |   |    |   |   |   |   |   |   |   |
|              | 5-AXLE + | 7 | 19 | 9 |   | 12 | 1 | 1 | 3 | 1 | 1 | 1 | 4 |
| 8:15-8:30 AM | 2-AXLE   | 1 | 6  | 5 | 2 | 5  | 5 | 1 | 1 |   | 3 | 1 | 1 |
|              | 3-AXLE   |   | 4  | 1 |   | 8  | 1 |   |   |   |   |   |   |
|              | 4-AXLE   |   |    |   |   |    |   |   |   |   |   |   |   |
|              | 5-AXLE + | 4 | 16 | 3 |   | 9  |   | 2 | 3 | 1 |   | 1 | 6 |

|              |          |   |    |   |   |    |   |   |   |   |   |   |   |
|--------------|----------|---|----|---|---|----|---|---|---|---|---|---|---|
| 8:30-8:45 AM | 2-AXLE   | 3 | 6  | 3 |   | 6  | 4 | 1 | 5 | 2 | 1 | 2 | 2 |
|              | 3-AXLE   |   | 7  |   |   | 4  | 4 |   | 1 | 3 |   |   | 4 |
|              | 4-AXLE   |   | 1  |   |   | 2  |   |   |   |   |   |   |   |
|              | 5-AXLE + | 5 | 20 | 6 |   | 12 | 2 | 3 | 1 |   | 3 | 5 | 5 |
| 8:45-9:00 AM | 2-AXLE   | 3 | 11 | 2 | 4 | 6  | 1 | 1 | 2 |   | 1 | 4 |   |
|              | 3-AXLE   |   | 11 | 2 |   | 8  |   | 2 | 1 |   |   |   |   |
|              | 4-AXLE   | 1 | 1  |   |   |    |   |   |   |   |   |   |   |
|              | 5-AXLE + | 5 | 15 | 1 | 1 | 19 | 3 | 4 | 5 | 4 | 1 | 2 | 6 |

| TIME         | TYPE     | NB RT | NB THRU | NB LT | SB RT | SB THRU | SB LT | EB RT | EB THRU | EB LT | WB RT | WB THRU | WB LT |
|--------------|----------|-------|---------|-------|-------|---------|-------|-------|---------|-------|-------|---------|-------|
| 4:00-4:15 PM | 2-AXLE   | 1     | 2       | 1     | 1     | 5       |       | 2     | 2       | 1     |       |         | 1     |
|              | 3-AXLE   |       | 6       |       |       | 4       | 4     | 1     | 2       | 3     |       |         | 1     |
|              | 4-AXLE   |       |         |       |       |         |       |       |         |       |       |         |       |
|              | 5-AXLE + | 9     | 10      | 9     | 1     | 7       | 4     | 2     | 8       | 3     |       | 6       | 5     |
| 4:15-4:30 PM | 2-AXLE   | 3     | 7       | 4     |       | 3       |       |       | 6       | 1     |       | 1       |       |
|              | 3-AXLE   | 3     | 6       | 3     | 2     | 13      | 6     |       | 1       | 2     |       |         |       |
|              | 4-AXLE   |       |         |       |       |         |       |       |         |       |       |         |       |
|              | 5-AXLE + | 7     | 4       | 7     |       | 10      | 2     | 5     | 5       |       |       | 6       | 4     |

|              |          |   |    |   |   |    |    |   |   |   |   |   |   |
|--------------|----------|---|----|---|---|----|----|---|---|---|---|---|---|
| 4:30-4:45 PM | 2-AXLE   | 4 | 4  | 4 | 1 | 1  |    | 3 | 3 | 3 |   | 3 |   |
|              | 3-AXLE   |   | 7  |   |   | 4  | 13 | 1 | 1 |   | 2 | 1 | 4 |
|              | 4-AXLE   |   |    |   |   |    |    |   |   |   |   |   |   |
|              | 5-AXLE + | 6 | 10 | 6 |   | 10 | 2  | 2 | 7 | 3 |   | 3 | 4 |
| 4:45-5:00 PM | 2-AXLE   | 2 | 2  | 2 |   | 3  | 2  | 1 | 6 |   |   | 2 | 1 |
|              | 3-AXLE   | 2 | 3  | 2 |   | 7  | 12 | 2 | 1 |   | 1 | 1 | 6 |
|              | 4-AXLE   |   |    |   |   |    |    |   |   |   |   | 1 |   |
|              | 5-AXLE + | 4 | 11 | 3 | 1 | 4  | 1  | 5 | 4 | 2 | 4 | 1 | 4 |
| 5:00-5:15 PM | 2-AXLE   | 3 |    | 3 |   | 3  | 1  | 3 | 1 | 2 |   | 4 | 1 |
|              | 3-AXLE   | 2 | 4  | 2 |   | 6  | 15 |   | 2 | 1 |   | 5 | 1 |
|              | 4-AXLE   |   | 1  |   |   |    |    |   |   |   |   |   |   |
|              | 5-AXLE + | 6 | 8  | 6 |   | 5  | 1  | 4 | 8 | 2 |   |   | 4 |
| 5:15-5:30 PM | 2-AXLE   |   | 9  |   |   | 5  |    | 1 | 4 | 1 |   | 2 | 1 |
|              | 3-AXLE   |   | 4  |   |   | 1  |    |   | 2 | 2 |   |   |   |
|              | 4-AXLE   |   | 1  |   |   | 1  |    |   | 1 |   |   |   |   |
|              | 5-AXLE + | 3 | 9  | 4 | 2 | 7  | 1  | 4 | 3 |   | 1 | 1 | 4 |

|              |          |   |   |   |   |   |   |   |   |   |   |   |   |
|--------------|----------|---|---|---|---|---|---|---|---|---|---|---|---|
| 5:30-5:45 PM | 2-AXLE   | 1 | 4 | 1 | 1 | 4 |   |   | 3 |   |   | 2 |   |
|              | 3-AXLE   | 1 | 2 | 1 |   | 1 | 3 | 1 |   | 1 |   | 1 |   |
|              | 4-AXLE   |   |   |   |   |   |   |   |   |   |   |   |   |
|              | 5-AXLE + | 6 | 4 | 6 |   | 5 | 1 | 3 | 6 |   |   |   | 2 |
| 5:45-6:00 PM | 2-AXLE   | 1 | 1 | 1 |   | 2 | 1 |   | 3 |   |   |   |   |
|              | 3-AXLE   | 2 | 7 | 2 |   | 3 | 2 | 2 | 1 | 1 | 1 |   | 1 |
|              | 4-AXLE   |   |   |   |   |   |   |   |   |   |   |   |   |
|              | 5-AXLE + | 3 | 8 | 3 |   | 7 |   | 1 | 5 |   | 1 | 5 | 3 |

TWO-WAY STOP CONTROL SUMMARY

Analyst: Petre  
 Agency/Co.: County of San Bernardino  
 Date Performed: 4/26/2012  
 Analysis Time Period: Existing AM  
 Intersection: SR38 at Garnet St  
 Jurisdiction:  
 Units: U. S. Customary  
 Analysis Year: Existing  
 Project ID:  
 East/West Street: Garnet Street  
 North/South Street: SR38  
 Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

| Major Street: Approach Movement | Eastbound |        |        | Westbound |        |        |
|---------------------------------|-----------|--------|--------|-----------|--------|--------|
|                                 | 1<br>L    | 2<br>T | 3<br>R | 4<br>L    | 5<br>T | 6<br>R |
| Volume                          | 48        | 139    | 3      | 2         | 483    | 163    |
| Peak-Hour Factor, PHF           | 0.73      | 0.73   | 0.73   | 1.00      | 1.00   | 1.00   |
| Hourly Flow Rate, HFR           | 65        | 190    | 4      | 2         | 483    | 163    |
| Percent Heavy Vehicles          | 0         | --     | --     | 0         | --     | --     |
| Median Type/Storage             | Undivided |        |        | /         |        |        |
| RT Channelized?                 |           |        |        |           |        |        |
| Lanes                           | 0         | 1      | 0      | 0         | 1      | 0      |
| Configuration                   | LTR       |        |        |           | LTR    |        |
| Upstream Signal?                | No        |        |        |           | No     |        |

| Minor Street: Approach Movement  | Northbound |        |        | Southbound |         |         |
|----------------------------------|------------|--------|--------|------------|---------|---------|
|                                  | 7<br>L     | 8<br>T | 9<br>R | 10<br>L    | 11<br>T | 12<br>R |
| Volume                           | 0          | 3      | 0      | 33         | 1       | 65      |
| Peak Hour Factor, PHF            | 0.75       | 0.75   | 0.75   | 0.69       | 0.69    | 0.69    |
| Hourly Flow Rate, HFR            | 0          | 4      | 0      | 47         | 1       | 94      |
| Percent Heavy Vehicles           | 0          | 0      | 0      | 0          | 0       | 0       |
| Percent Grade (%)                | 0          |        |        |            | 0       |         |
| Flared Approach: Exists?/Storage |            |        | No     | /          |         | No      |
| Lanes                            | 0          | 1      | 0      | 0          | 1       | 0       |
| Configuration                    | LTR        |        |        |            | LTR     |         |

Delay, Queue Length, and Level of Service

| Approach Movement Lane Config | EB       | WB       | Northbound |          |          | Southbound |           |           |
|-------------------------------|----------|----------|------------|----------|----------|------------|-----------|-----------|
|                               | 1<br>LTR | 4<br>LTR | 7<br>LTR   | 8<br>LTR | 9<br>LTR | 10<br>LTR  | 11<br>LTR | 12<br>LTR |
| v (vph)                       | 65       | 2        | 4          |          |          | 142        |           |           |
| C(m) (vph)                    | 949      | 1391     | 234        |          |          | 381        |           |           |
| v/c                           | 0.07     | 0.00     | 0.02       |          |          | 0.37       |           |           |
| 95% queue length              | 0.22     | 0.00     | 0.05       |          |          | 1.69       |           |           |
| Control Delay                 | 9.1      | 7.6      | 20.7       |          |          | 20.0       |           |           |
| LOS                           | A        | A        | C          |          |          | C          |           |           |
| Approach Delay                |          |          | 20.7       |          |          | 20.0       |           |           |
| Approach LOS                  |          |          | C          |          |          | C          |           |           |

TWO-WAY STOP CONTROL SUMMARY

Analyst: Petre  
 Agency/Co.: County of San Bernardino  
 Date Performed: 4/26/2012  
 Analysis Time Period: Existing PM  
 Intersection: SR38 at Garnet St  
 Jurisdiction:  
 Units: U. S. Customary  
 Analysis Year: Existing  
 Project ID:  
 East/West Street: Garnet Street  
 North/South Street: SR38  
 Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

| Major Street:          | Approach Movement | Eastbound |        |        | Westbound |        |        |
|------------------------|-------------------|-----------|--------|--------|-----------|--------|--------|
|                        |                   | 1<br>L    | 2<br>T | 3<br>R | 4<br>L    | 5<br>T | 6<br>R |
| Volume                 |                   | 43        | 360    | 15     | 4         | 197    | 56     |
| Peak-Hour Factor, PHF  |                   | 0.91      | 0.91   | 0.91   | 0.82      | 0.82   | 0.82   |
| Hourly Flow Rate, HFR  |                   | 47        | 395    | 16     | 4         | 240    | 68     |
| Percent Heavy Vehicles |                   | 0         | --     | --     | 0         | --     | --     |
| Median Type/Storage    |                   | Undivided |        |        | /         |        |        |
| RT Channelized?        |                   |           |        |        | /         |        |        |
| Lanes                  |                   | 0         | 1      | 0      | 0         | 1      | 0      |
| Configuration          |                   | LTR       |        |        | /         | LTR    |        |
| Upstream Signal?       |                   | No        |        |        | /         | No     |        |

| Minor Street:                    | Approach Movement | Northbound |        |        | Southbound |         |         |
|----------------------------------|-------------------|------------|--------|--------|------------|---------|---------|
|                                  |                   | 7<br>L     | 8<br>T | 9<br>R | 10<br>L    | 11<br>T | 12<br>R |
| Volume                           |                   | 8          | 3      | 13     | 143        | 3       | 78      |
| Peak Hour Factor, PHF            |                   | 1.00       | 1.00   | 1.00   | 0.87       | 0.87    | 0.87    |
| Hourly Flow Rate, HFR            |                   | 8          | 3      | 13     | 164        | 3       | 89      |
| Percent Heavy Vehicles           |                   | 0          | 0      | 0      | 0          | 0       | 0       |
| Percent Grade (%)                |                   | 0          |        |        | /          | 0       |         |
| Flared Approach: Exists?/Storage |                   | No         |        |        | /          | No      |         |
| Lanes                            |                   | 0          | 1      | 0      | 0          | 1       | 0       |
| Configuration                    |                   | LTR        |        |        | /          | LTR     |         |

Delay, Queue Length, and Level of Service

| Approach Movement | EB   | WB   | Northbound |       |   | Southbound |      |    |  |
|-------------------|------|------|------------|-------|---|------------|------|----|--|
|                   | 1    | 4    | 7          | 8     | 9 | 10         | 11   | 12 |  |
| Lane Config       | LTR  | LTR  | LTR        |       |   | LTR        |      |    |  |
| v (vph)           | 47   | 4    | 24         |       |   | 256        |      |    |  |
| C(m) (vph)        | 1264 | 1159 | 385        |       |   | 372        |      |    |  |
| v/c               | 0.04 | 0.00 | 0.06       |       |   | 0.69       |      |    |  |
| 95% queue length  | 0.12 | 0.01 | 0.20       |       |   | 4.94       |      |    |  |
| Control Delay     | 8.0  | 8.1  | 15.0-      |       |   | 33.5       |      |    |  |
| LOS               | A    | A    | B          |       |   | D          |      |    |  |
| Approach Delay    |      |      |            | 15.0- |   |            | 33.5 |    |  |
| Approach LOS      |      |      |            | B     |   |            | D    |    |  |

### PCI CALCULATION.

Intersection:

Mill Creek Rd. (SR38) @ Garnet St.

Date:

5/1/2012

**AM**

| Time             | EB       |            |           | WB         |            |          | NB       |          |          | SB        |          |           | Total |
|------------------|----------|------------|-----------|------------|------------|----------|----------|----------|----------|-----------|----------|-----------|-------|
|                  | Rt       | Th         | Lt        | Rt         | Th         | Lt       | Rt       | Th       | Lt       | Rt        | Th       | Lt        |       |
| 7:00             | 1        | 26         | 15        | 33         | 127        | 2        | 0        | 1        | 0        | 21        | 0        | 5         | 231   |
| 7:15             | 2        | 38         | 10        | 43         | 111        | 0        | 0        | 1        | 0        | 23        | 0        | 8         | 236   |
| 7:30             | 0        | 25         | 10        | 58         | 116        | 0        | 0        | 0        | 0        | 12        | 0        | 6         | 227   |
| 7:45             | 0        | 34         | 8         | 28         | 124        | 0        | 0        | 1        | 0        | 6         | 1        | 12        | 214   |
| <b>Total Veh</b> | <b>3</b> | <b>123</b> | <b>43</b> | <b>162</b> | <b>478</b> | <b>2</b> | <b>0</b> | <b>3</b> | <b>0</b> | <b>62</b> | <b>1</b> | <b>31</b> |       |
| <b>Car Only</b>  | <b>3</b> | <b>106</b> | <b>37</b> | <b>161</b> | <b>468</b> | <b>2</b> | <b>0</b> | <b>3</b> | <b>0</b> | <b>57</b> | <b>1</b> | <b>27</b> |       |
| <b>Factor</b>    | 0.73     |            |           | 1.024351   |            |          | 0.75     |          |          | 0.685484  |          |           |       |

**Trucks**

|                    |          |            |           |            |            |          |          |          |          |           |          |           |
|--------------------|----------|------------|-----------|------------|------------|----------|----------|----------|----------|-----------|----------|-----------|
| 2 axle             | 0        | 11         | 5         | 1          | 10         | 0        | 0        | 0        | 0        | 5         | 0        | 4         |
| PCI                | 0        | 16.5       | 7.5       | 1.5        | 15         | 0        | 0        | 0        | 0        | 7.5       | 0        | 6         |
| 3 axle             | 0        | 2          | 0         | 0          | 0          | 0        | 0        | 0        | 0        | 0         | 0        | 0         |
| PCI                | 0        | 4          | 0         | 0          | 0          | 0        | 0        | 0        | 0        | 0         | 0        | 0         |
| 4+ axle            | 0        | 4          | 1         | 0          | 0          | 0        | 0        | 0        | 0        | 0         | 0        | 0         |
| PCI                | 0        | 12         | 3         | 0          | 0          | 0        | 0        | 0        | 0        | 0         | 0        | 0         |
| <b>Total (PCI)</b> | <b>3</b> | <b>139</b> | <b>48</b> | <b>163</b> | <b>483</b> | <b>2</b> | <b>0</b> | <b>3</b> | <b>0</b> | <b>65</b> | <b>1</b> | <b>33</b> |

**PM**

| Time             | EB        |            |           | WB        |            |          | NB        |          |          | SB        |          |            | Total |
|------------------|-----------|------------|-----------|-----------|------------|----------|-----------|----------|----------|-----------|----------|------------|-------|
|                  | Rt        | Th         | Lt        | Rt        | Th         | Lt       | Rt        | Th       | Lt       | Rt        | Th       | Lt         |       |
| 5:00             | 5         | 96         | 13        | 21        | 41         | 1        | 2         | 1        | 1        | 16        | 0        | 29         | 226   |
| 5:15             | 2         | 85         | 9         | 9         | 44         | 1        | 2         | 2        | 2        | 20        | 1        | 42         | 219   |
| 5:30             | 4         | 98         | 11        | 18        | 53         | 2        | 3         | 1        | 2        | 16        | 2        | 44         | 254   |
| 5:45             | 4         | 78         | 10        | 7         | 52         | 0        | 6         | 1        | 3        | 23        | 0        | 28         | 212   |
| <b>Total Veh</b> | <b>15</b> | <b>357</b> | <b>43</b> | <b>55</b> | <b>190</b> | <b>4</b> | <b>13</b> | <b>5</b> | <b>8</b> | <b>75</b> | <b>3</b> | <b>143</b> |       |
| <b>Car Only</b>  | <b>15</b> | <b>355</b> | <b>43</b> | <b>53</b> | <b>182</b> | <b>4</b> | <b>13</b> | <b>3</b> | <b>8</b> | <b>70</b> | <b>3</b> | <b>143</b> |       |
| <b>Factor</b>    | 0.913717  |            |           | 0.818493  |            |          | 1         |          |          | 0.870968  |          |            |       |

**Trucks**

|                    |           |            |           |           |            |          |           |          |          |           |          |            |
|--------------------|-----------|------------|-----------|-----------|------------|----------|-----------|----------|----------|-----------|----------|------------|
| 2 axle             | 0         | 1          | 0         | 2         | 5          | 0        | 0         | 2        | 0        | 4         | 0        | 0          |
| PCI                | 0         | 1.5        | 0         | 3         | 7.5        | 0        | 0         | 0        | 0        | 6         | 0        | 0          |
| 3 axle             | 0         | 0          | 0         | 0         | 2          | 0        | 0         | 0        | 0        | 1         | 0        | 0          |
| PCI                | 0         | 0          | 0         | 0         | 4          | 0        | 0         | 0        | 0        | 2         | 0        | 0          |
| 4+ axle            | 0         | 1          | 0         | 0         | 1          | 0        | 0         | 0        | 0        | 0         | 0        | 0          |
| PCI                | 0         | 3          | 0         | 0         | 3          | 0        | 0         | 0        | 0        | 0         | 0        | 0          |
| <b>Total (PCI)</b> | <b>15</b> | <b>360</b> | <b>43</b> | <b>56</b> | <b>197</b> | <b>4</b> | <b>13</b> | <b>3</b> | <b>8</b> | <b>78</b> | <b>3</b> | <b>143</b> |

MILL CREEK RD (SR38) @ GARNET ST.  
SAN BERNARDINO COUNTY

PUBLIC WORKS  
TRAFFIC DIVISION

File Name : SR38@GARNET120501

Site Code : 00000000

Start Date : 05/01/2012

Page No : 1

Groups Printed- Unshifted

| Start Time  | GARNET ST Northbound |      |      |      | GARNET ST Southbound |      |      |      | MILL CREEK RD (SH38) Eastbound |      |      |      | MILL CREEK RD (SH38) Westbound |      |      |      | Int. Total |
|-------------|----------------------|------|------|------|----------------------|------|------|------|--------------------------------|------|------|------|--------------------------------|------|------|------|------------|
|             | Right                | Thru | Left | Peds | Right                | Thru | Left | Peds | Right                          | Thru | Left | Peds | Right                          | Thru | Left | Peds |            |
| Factor      | 1.0                  | 1.0  | 1.0  | 1.0  | 1.0                  | 1.0  | 1.0  | 1.0  | 1.0                            | 1.0  | 1.0  | 1.0  | 1.0                            | 1.0  | 1.0  | 1.0  | 1.0        |
| 07:00 AM    | 0                    | 1    | 0    | 0    | 21                   | 0    | 5    | 0    | 1                              | 26   | 15   | 0    | 33                             | 127  | 2    | 0    | 231        |
| 07:15 AM    | 0                    | 1    | 0    | 0    | 23                   | 0    | 8    | 0    | 2                              | 38   | 10   | 0    | 43                             | 111  | 0    | 0    | 236        |
| 07:30 AM    | 0                    | 0    | 0    | 0    | 12                   | 0    | 6    | 0    | 0                              | 25   | 10   | 0    | 58                             | 116  | 0    | 0    | 227        |
| 07:45 AM    | 0                    | 1    | 0    | 0    | 6                    | 1    | 12   | 0    | 0                              | 34   | 8    | 0    | 28                             | 124  | 0    | 0    | 214        |
| Total       | 0                    | 3    | 0    | 0    | 62                   | 1    | 31   | 0    | 3                              | 123  | 43   | 0    | 162                            | 478  | 2    | 0    | 908        |
| 08:00 AM    | 0                    | 0    | 0    | 0    | 3                    | 1    | 10   | 0    | 1                              | 25   | 9    | 0    | 37                             | 89   | 0    | 0    | 175        |
| 08:15 AM    | 2                    | 0    | 0    | 0    | 8                    | 1    | 12   | 0    | 2                              | 23   | 7    | 0    | 27                             | 76   | 1    | 0    | 159        |
| 08:30 AM    | 0                    | 1    | 0    | 0    | 14                   | 3    | 11   | 0    | 1                              | 38   | 5    | 0    | 15                             | 63   | 1    | 0    | 152        |
| 08:45 AM    | 1                    | 1    | 0    | 0    | 10                   | 0    | 7    | 0    | 0                              | 29   | 7    | 0    | 11                             | 79   | 0    | 0    | 145        |
| Total       | 3                    | 2    | 0    | 0    | 35                   | 5    | 40   | 0    | 4                              | 115  | 28   | 0    | 90                             | 307  | 2    | 0    | 631        |
| 04:00 PM    | 2                    | 0    | 2    | 0    | 8                    | 1    | 17   | 0    | 1                              | 68   | 5    | 0    | 13                             | 45   | 1    | 0    | 163        |
| 04:15 PM    | 0                    | 0    | 1    | 0    | 11                   | 1    | 24   | 0    | 1                              | 92   | 13   | 0    | 15                             | 43   | 0    | 0    | 201        |
| 04:30 PM    | 1                    | 0    | 0    | 0    | 12                   | 1    | 20   | 0    | 1                              | 75   | 7    | 0    | 16                             | 40   | 1    | 0    | 174        |
| 04:45 PM    | 1                    | 2    | 0    | 0    | 20                   | 1    | 24   | 0    | 0                              | 90   | 10   | 0    | 10                             | 47   | 0    | 0    | 205        |
| Total       | 4                    | 2    | 3    | 0    | 51                   | 4    | 85   | 0    | 3                              | 325  | 35   | 0    | 54                             | 175  | 2    | 0    | 743        |
| 05:00 PM    | 2                    | 1    | 1    | 0    | 16                   | 0    | 29   | 0    | 5                              | 96   | 13   | 0    | 21                             | 41   | 1    | 0    | 226        |
| 05:15 PM    | 2                    | 2    | 2    | 0    | 20                   | 1    | 42   | 0    | 2                              | 85   | 9    | 0    | 9                              | 44   | 1    | 0    | 219        |
| 05:30 PM    | 3                    | 1    | 2    | 0    | 16                   | 2    | 44   | 0    | 4                              | 98   | 11   | 0    | 18                             | 53   | 2    | 0    | 254        |
| 05:45 PM    | 6                    | 1    | 3    | 0    | 23                   | 0    | 28   | 0    | 4                              | 78   | 10   | 0    | 7                              | 52   | 0    | 0    | 212        |
| Total       | 13                   | 5    | 8    | 0    | 75                   | 3    | 143  | 0    | 15                             | 357  | 43   | 0    | 55                             | 190  | 4    | 0    | 911        |
| Grand Total | 20                   | 12   | 11   | 0    | 223                  | 13   | 299  | 0    | 25                             | 920  | 149  | 0    | 361                            | 1150 | 10   | 0    | 3193       |
| Apprch %    | 46.5                 | 27.9 | 25.6 | 0.0  | 41.7                 | 2.4  | 55.9 | 0.0  | 2.3                            | 84.1 | 13.6 | 0.0  | 23.7                           | 75.6 | 0.7  | 0.0  |            |
| Total %     | 0.6                  | 0.4  | 0.3  | 0.0  | 7.0                  | 0.4  | 9.4  | 0.0  | 0.8                            | 28.8 | 4.7  | 0.0  | 11.3                           | 36.0 | 0.3  | 0.0  |            |





## TWO-WAY STOP CONTROL SUMMARY

Analyst: Petre  
 Agency/Co.: County of San Bernardino  
 Date Performed: 4/26/2012  
 Analysis Time Period: Existing AM  
 Intersection: SR38 at Bryant St  
 Jurisdiction:  
 Units: U. S. Customary  
 Analysis Year: Existing  
 Project ID:  
 East/West Street: Bryant Street  
 North/South Street: SR38  
 Intersection Orientation: EW Study period (hrs): 0.25

## Vehicle Volumes and Adjustments

| Major Street: | Approach<br>Movement | Eastbound |        |        | Westbound |        |        |
|---------------|----------------------|-----------|--------|--------|-----------|--------|--------|
|               |                      | 1<br>L    | 2<br>T | 3<br>R | 4<br>L    | 5<br>T | 6<br>R |

|                        |  |           |      |  |      |      |    |
|------------------------|--|-----------|------|--|------|------|----|
| Volume                 |  | 48        | 98   |  | 48   | 137  |    |
| Peak-Hour Factor, PHF  |  | 0.91      | 0.91 |  | 1.00 | 1.00 |    |
| Hourly Flow Rate, HFR  |  | 52        | 107  |  | 48   | 137  |    |
| Percent Heavy Vehicles |  | --        | --   |  | 0    | --   | -- |
| Median Type/Storage    |  | Undivided |      |  | /    |      |    |
| RT Channelized?        |  |           |      |  |      |      |    |
| Lanes                  |  | 1         | 0    |  | 1    | 1    |    |
| Configuration          |  |           | TR   |  | L    | T    |    |
| Upstream Signal?       |  | No        |      |  |      | No   |    |

| Minor Street: | Approach<br>Movement | Northbound |        |        | Southbound |         |         |
|---------------|----------------------|------------|--------|--------|------------|---------|---------|
|               |                      | 7<br>L     | 8<br>T | 9<br>R | 10<br>L    | 11<br>T | 12<br>R |

|                                  |  |      |   |      |   |   |   |
|----------------------------------|--|------|---|------|---|---|---|
| Volume                           |  | 389  |   | 39   |   |   |   |
| Peak Hour Factor, PHF            |  | 0.90 |   | 0.90 |   |   |   |
| Hourly Flow Rate, HFR            |  | 432  |   | 43   |   |   |   |
| Percent Heavy Vehicles           |  | 0    |   | 0    |   |   |   |
| Percent Grade (%)                |  |      | 0 |      |   | 0 |   |
| Flared Approach: Exists?/Storage |  |      |   |      | / |   | / |
| Lanes                            |  | 1    |   | 1    |   |   |   |
| Configuration                    |  | L    |   | R    |   |   |   |

## Delay, Queue Length, and Level of Service

| Approach | EB | WB | Northbound |        |        | Southbound |         |         |
|----------|----|----|------------|--------|--------|------------|---------|---------|
|          |    |    | 7<br>L     | 8<br>L | 9<br>R | 10<br>L    | 11<br>T | 12<br>R |

|                  |  |      |      |      |      |  |  |
|------------------|--|------|------|------|------|--|--|
| v (vph)          |  | 48   | 432  |      | 43   |  |  |
| C(m) (vph)       |  | 1433 | 639  |      | 954  |  |  |
| v/c              |  | 0.03 | 0.68 |      | 0.05 |  |  |
| 95% queue length |  | 0.10 | 5.21 |      | 0.14 |  |  |
| Control Delay    |  | 7.6  | 21.6 |      | 9.0  |  |  |
| LOS              |  | A    | C    |      | A    |  |  |
| Approach Delay   |  |      |      | 20.4 |      |  |  |
| Approach LOS     |  |      |      | C    |      |  |  |

TWO-WAY STOP CONTROL SUMMARY

Analyst: Petre  
 Agency/Co.: County of San Bernardino  
 Date Performed: 4/26/2012  
 Analysis Time Period: Existing PM  
 Intersection: SR38 at Bryant St  
 Jurisdiction:  
 Units: U. S. Customary  
 Analysis Year: Existing  
 Project ID:  
 East/West Street: Bryant Street  
 North/South Street: SR38  
 Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

| Major Street:          | Approach Movement | Eastbound |        |        | Westbound |        |        |
|------------------------|-------------------|-----------|--------|--------|-----------|--------|--------|
|                        |                   | 1<br>L    | 2<br>T | 3<br>R | 4<br>L    | 5<br>T | 6<br>R |
| Volume                 |                   | 127       | 322    |        | 47        | 114    |        |
| Peak-Hour Factor, PHF  |                   | 0.92      | 0.92   |        | 1.00      | 1.00   |        |
| Hourly Flow Rate, HFR  |                   | 138       | 349    |        | 47        | 114    |        |
| Percent Heavy Vehicles |                   | --        | --     |        | 0         | --     | --     |
| Median Type/Storage    |                   | Undivided |        |        | /         |        |        |
| RT Channelized?        |                   |           |        |        |           |        |        |
| Lanes                  |                   | 1         | 0      |        | 1         | 1      |        |
| Configuration          |                   |           | TR     |        | L         | T      |        |
| Upstream Signal?       |                   | No        |        |        | No        |        |        |

| Minor Street:                    | Approach Movement | Northbound |        |        | Southbound |         |         |
|----------------------------------|-------------------|------------|--------|--------|------------|---------|---------|
|                                  |                   | 7<br>L     | 8<br>T | 9<br>R | 10<br>L    | 11<br>T | 12<br>R |
| Volume                           |                   | 135        |        | 53     |            |         |         |
| Peak Hour Factor, PHF            |                   | 0.92       |        | 0.92   |            |         |         |
| Hourly Flow Rate, HFR            |                   | 146        |        | 57     |            |         |         |
| Percent Heavy Vehicles           |                   | 0          |        | 0      |            |         |         |
| Percent Grade (%)                |                   |            | 0      |        |            | 0       |         |
| Flared Approach: Exists?/Storage |                   |            |        |        | /          |         | /       |
| Lanes                            |                   | 1          |        | 1      |            |         |         |
| Configuration                    |                   | L          |        | R      |            |         |         |

Delay, Queue Length, and Level of Service

| Approach Movement | EB | WB   | Northbound |        |        | Southbound |         |         |
|-------------------|----|------|------------|--------|--------|------------|---------|---------|
|                   |    |      | 7<br>L     | 8<br>L | 9<br>R | 10<br>L    | 11<br>T | 12<br>R |
| v (vph)           |    | 47   | 146        |        | 57     |            |         |         |
| C(m) (vph)        |    | 1086 | 497        |        | 733    |            |         |         |
| v/c               |    | 0.04 | 0.29       |        | 0.08   |            |         |         |
| 95% queue length  |    | 0.14 | 1.21       |        | 0.25   |            |         |         |
| Control Delay     |    | 8.5  | 15.2       |        | 10.3   |            |         |         |
| LOS               |    | A    | C          |        | B      |            |         |         |
| Approach Delay    |    |      |            | 13.9   |        |            |         |         |
| Approach LOS      |    |      |            | B      |        |            |         |         |

**PCI CALCULATION.**

Intersection:

Mill Creek Rd. (SR38) @ Bryant St.

Date:

5/8/2012

**AM**

| Time             | EB         |           |          | WB       |            |           | NB        |          |            | SB       |          |          | Total |
|------------------|------------|-----------|----------|----------|------------|-----------|-----------|----------|------------|----------|----------|----------|-------|
|                  | Rt         | Th        | Lt       | Rt       | Th         | Lt        | Rt        | Th       | Lt         | Rt       | Th       | Lt       |       |
| 7:00             | 21         | 9         | 0        | 0        | 37         | 12        | 9         | 0        | 97         | 0        | 0        | 0        | 185   |
| 7:15             | 26         | 13        | 0        | 0        | 43         | 12        | 8         | 0        | 91         | 0        | 0        | 0        | 193   |
| 7:30             | 27         | 13        | 0        | 0        | 27         | 15        | 9         | 0        | 108        | 0        | 0        | 0        | 199   |
| 7:45             | 26         | 18        | 0        | 0        | 32         | 10        | 13        | 0        | 90         | 0        | 0        | 0        | 189   |
| <b>Total Veh</b> | <b>100</b> | <b>53</b> | <b>0</b> | <b>0</b> | <b>139</b> | <b>49</b> | <b>39</b> | <b>0</b> | <b>386</b> | <b>0</b> | <b>0</b> | <b>0</b> |       |
| <b>Car Only</b>  | <b>98</b>  | <b>48</b> | <b>0</b> | <b>0</b> | <b>137</b> | <b>48</b> | <b>39</b> | <b>0</b> | <b>381</b> | <b>0</b> | <b>0</b> | <b>0</b> |       |
| <b>Factor</b>    | 0.9125     |           |          | 1.10119  |            |           | 0.897436  |          |            | 0        |          |          |       |

**Trucks**

|                    |            |           |          |          |            |           |           |          |            |          |          |          |  |
|--------------------|------------|-----------|----------|----------|------------|-----------|-----------|----------|------------|----------|----------|----------|--|
| 2 axle             | 2          | 3         | 0        | 0        | 2          | 1         | 0         | 0        | 4          | 0        | 0        | 0        |  |
| PCI                | 3          | 4.5       | 0        | 0        | 3          | 1.5       | 0         | 0        | 6          | 0        | 0        | 0        |  |
| 3 axle             | 0          | 1         | 0        | 0        | 0          | 0         | 0         | 0        | 1          | 0        | 0        | 0        |  |
| PCI                | 0          | 2         | 0        | 0        | 0          | 0         | 0         | 0        | 2          | 0        | 0        | 0        |  |
| 4+ axle            | 0          | 1         | 0        | 0        | 0          | 0         | 0         | 0        | 0          | 0        | 0        | 0        |  |
| PCI                | 0          | 3         | 0        | 0        | 0          | 0         | 0         | 0        | 0          | 0        | 0        | 0        |  |
| <b>Total (PCI)</b> | <b>101</b> | <b>58</b> | <b>0</b> | <b>0</b> | <b>140</b> | <b>50</b> | <b>39</b> | <b>0</b> | <b>389</b> | <b>0</b> | <b>0</b> | <b>0</b> |  |

**PM**

| Time             | EB         |            |          | WB       |            |           | NB        |          |            | SB       |          |          | Total |
|------------------|------------|------------|----------|----------|------------|-----------|-----------|----------|------------|----------|----------|----------|-------|
|                  | Rt         | Th         | Lt       | Rt       | Th         | Lt        | Rt        | Th       | Lt         | Rt       | Th       | Lt       |       |
| 4:45             | 79         | 34         | 0        | 0        | 22         | 11        | 16        | 0        | 28         | 0        | 0        | 0        | 190   |
| 5:00             | 75         | 38         | 0        | 0        | 41         | 12        | 13        | 0        | 46         | 0        | 0        | 0        | 225   |
| 5:15             | 77         | 29         | 0        | 0        | 32         | 16        | 14        | 0        | 26         | 0        | 0        | 0        | 194   |
| 5:30             | 93         | 29         | 0        | 0        | 20         | 9         | 12        | 0        | 39         | 0        | 0        | 0        | 202   |
| <b>Total Veh</b> | <b>324</b> | <b>130</b> | <b>0</b> | <b>0</b> | <b>115</b> | <b>48</b> | <b>55</b> | <b>0</b> | <b>139</b> | <b>0</b> | <b>0</b> | <b>0</b> |       |
| <b>Car Only</b>  | <b>322</b> | <b>127</b> | <b>0</b> | <b>0</b> | <b>114</b> | <b>47</b> | <b>53</b> | <b>0</b> | <b>135</b> | <b>0</b> | <b>0</b> | <b>0</b> |       |
| <b>Factor</b>    | 0.920082   |            |          | 1.387931 |            |           | 0.921569  |          |            | 0        |          |          |       |

**Trucks**

|                    |            |            |          |          |            |           |           |          |            |          |          |          |  |
|--------------------|------------|------------|----------|----------|------------|-----------|-----------|----------|------------|----------|----------|----------|--|
| 2 axle             | 2          | 1          | 0        | 0        | 0          | 0         | 2         | 0        | 4          | 0        | 0        | 0        |  |
| PCI                | 3          | 1.5        | 0        | 0        | 0          | 0         | 3         | 0        | 6          | 0        | 0        | 0        |  |
| 3 axle             | 0          | 1          | 0        | 0        | 1          | 1         | 0         | 0        | 0          | 0        | 0        | 0        |  |
| PCI                | 0          | 2          | 0        | 0        | 2          | 2         | 0         | 0        | 0          | 0        | 0        | 0        |  |
| 4+ axle            | 0          | 1          | 0        | 0        | 0          | 0         | 0         | 0        | 0          | 0        | 0        | 0        |  |
| PCI                | 0          | 3          | 0        | 0        | 0          | 0         | 0         | 0        | 0          | 0        | 0        | 0        |  |
| <b>Total (PCI)</b> | <b>325</b> | <b>134</b> | <b>0</b> | <b>0</b> | <b>116</b> | <b>49</b> | <b>56</b> | <b>0</b> | <b>141</b> | <b>0</b> | <b>0</b> | <b>0</b> |  |

SAN BERNARDINO COUNTY

PUBLIC WORKS  
TRAFFIC DIVISION

File Name : SR38@BRYANT120508

Site Code : 00000000

Start Date : 05/08/2012

Page No : 1

Groups Printed- Unshifted

| Start Time  | BRYANT ST.<br>Northbound |      |      |      | BRYANT ST.<br>Southbound |      |      |      | MILL CREEK RD (SH38)<br>Eastbound |      |      |      | MILL CREEK RD (SH38)<br>Westbound |      |      |      | Int.<br>Total |
|-------------|--------------------------|------|------|------|--------------------------|------|------|------|-----------------------------------|------|------|------|-----------------------------------|------|------|------|---------------|
|             | Right                    | Thru | Left | Peds | Right                    | Thru | Left | Peds | Right                             | Thru | Left | Peds | Right                             | Thru | Left | Peds |               |
| Factor      | 1.0                      | 1.0  | 1.0  | 1.0  | 1.0                      | 1.0  | 1.0  | 1.0  | 1.0                               | 1.0  | 1.0  | 1.0  | 1.0                               | 1.0  | 1.0  | 1.0  |               |
| 07:00 AM    | 9                        | 0    | 97   | 0    | 0                        | 0    | 0    | 0    | 21                                | 9    | 0    | 0    | 0                                 | 37   | 12   | 0    | 185           |
| 07:15 AM    | 8                        | 0    | 91   | 0    | 0                        | 0    | 0    | 0    | 26                                | 13   | 0    | 0    | 0                                 | 43   | 12   | 0    | 193           |
| 07:30 AM    | 9                        | 0    | 108  | 0    | 0                        | 0    | 0    | 0    | 27                                | 13   | 0    | 0    | 0                                 | 27   | 15   | 0    | 199           |
| 07:45 AM    | 13                       | 0    | 90   | 0    | 0                        | 0    | 0    | 0    | 26                                | 18   | 0    | 0    | 0                                 | 32   | 10   | 0    | 189           |
| Total       | 39                       | 0    | 386  | 0    | 0                        | 0    | 0    | 0    | 100                               | 53   | 0    | 0    | 0                                 | 139  | 49   | 0    | 766           |
| 08:00 AM    | 14                       | 0    | 77   | 0    | 0                        | 0    | 0    | 0    | 21                                | 11   | 0    | 0    | 0                                 | 28   | 10   | 0    | 161           |
| 08:15 AM    | 10                       | 0    | 42   | 0    | 0                        | 0    | 0    | 0    | 30                                | 16   | 0    | 0    | 0                                 | 33   | 12   | 0    | 143           |
| 08:30 AM    | 6                        | 0    | 48   | 0    | 0                        | 0    | 0    | 0    | 24                                | 12   | 0    | 0    | 0                                 | 38   | 14   | 0    | 142           |
| 08:45 AM    | 15                       | 0    | 36   | 0    | 0                        | 0    | 0    | 0    | 13                                | 8    | 0    | 0    | 0                                 | 34   | 12   | 0    | 118           |
| Total       | 45                       | 0    | 203  | 0    | 0                        | 0    | 0    | 0    | 88                                | 47   | 0    | 0    | 0                                 | 133  | 48   | 0    | 564           |
| 04:00 PM    | 11                       | 0    | 28   | 0    | 0                        | 0    | 0    | 0    | 38                                | 33   | 0    | 0    | 0                                 | 21   | 21   | 0    | 152           |
| 04:15 PM    | 17                       | 0    | 15   | 0    | 0                        | 0    | 0    | 0    | 49                                | 38   | 0    | 0    | 0                                 | 26   | 15   | 0    | 160           |
| 04:30 PM    | 13                       | 0    | 29   | 0    | 0                        | 0    | 0    | 0    | 54                                | 29   | 0    | 0    | 0                                 | 14   | 11   | 0    | 150           |
| 04:45 PM    | 16                       | 0    | 28   | 0    | 0                        | 0    | 0    | 0    | 79                                | 34   | 0    | 1    | 0                                 | 22   | 11   | 0    | 191           |
| Total       | 57                       | 0    | 100  | 0    | 0                        | 0    | 0    | 0    | 220                               | 134  | 0    | 1    | 0                                 | 83   | 58   | 0    | 653           |
| 05:00 PM    | 13                       | 0    | 46   | 0    | 0                        | 0    | 0    | 0    | 75                                | 38   | 0    | 0    | 0                                 | 41   | 12   | 0    | 225           |
| 05:15 PM    | 14                       | 0    | 26   | 0    | 0                        | 0    | 0    | 0    | 77                                | 29   | 0    | 0    | 0                                 | 32   | 16   | 0    | 194           |
| 05:30 PM    | 12                       | 0    | 39   | 0    | 0                        | 0    | 0    | 0    | 93                                | 29   | 0    | 0    | 0                                 | 20   | 9    | 0    | 202           |
| 05:45 PM    | 23                       | 0    | 18   | 0    | 0                        | 0    | 0    | 0    | 67                                | 33   | 0    | 0    | 0                                 | 11   | 9    | 0    | 161           |
| Total       | 62                       | 0    | 129  | 0    | 0                        | 0    | 0    | 0    | 312                               | 129  | 0    | 0    | 0                                 | 104  | 46   | 0    | 782           |
| Grand Total | 203                      | 0    | 818  | 0    | 0                        | 0    | 0    | 0    | 720                               | 363  | 0    | 1    | 0                                 | 459  | 201  | 0    | 2765          |
| Apprch %    | 19.9                     | 0.0  | 80.1 | 0.0  | 0.0                      | 0.0  | 0.0  | 0.0  | 66.4                              | 33.5 | 0.0  | 0.1  | 0.0                               | 69.5 | 30.5 | 0.0  |               |
| Total %     | 7.3                      | 0.0  | 29.6 | 0.0  | 0.0                      | 0.0  | 0.0  | 0.0  | 26.0                              | 13.1 | 0.0  | 0.0  | 0.0                               | 16.6 | 7.3  | 0.0  |               |







MILL CREEK

RD



BRYANT ST

**WEBSTER**  
**Webster Based Signal Timing Evaluation Routine**  
For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

**Central Ave at Mission Blvd AM**

**Central Ave at Mission Blvd**

**County of San Bernardino**

**AM Peak Hour**

Parameter Values (using default set 'SANBAG (Existing)')

| Parameter                     | Other | Default | Min. Time Parameter         | Other  | Default | Sat. Flow Parameter           | Other | Default |
|-------------------------------|-------|---------|-----------------------------|--------|---------|-------------------------------|-------|---------|
| Duration of Peak Period (min) |       | 15      | Min. Time (Left Turns, sec) |        | 10      | Sat Flow (1 Left lane, vphg)  | 1700  | 1800    |
| Lost Time (sec)               |       | 2       | Min/Ped Time (Thrus, sec)   | Varies | Varies  | Sat Flow (2 Left lanes, vphg) | 3200  | 3500    |
| Vehicle Length (feet)         |       | 20      |                             |        |         | Sat Flow (1 Thru lane, vphg)  | 1800  | 1900    |
|                               |       |         |                             |        |         | Sat Flow (1 Right lane, vphg) |       | 1800    |

Input Values

|                               | Eastbound |      |      | Westbound |      |      | Northbound |      |      | Southbound |      |      |
|-------------------------------|-----------|------|------|-----------|------|------|------------|------|------|------------|------|------|
| Movement Times                | *L*       | T    | R    | L         | T    | *R*  | L          | *T*  | R    | *L*        | T    | R    |
| Movement 1: 10 secs           | X         |      |      | X         |      |      |            |      |      |            |      |      |
| Movement 2: 28 secs           |           | X    | X    |           | X    | X    |            |      |      |            |      |      |
| Movement 3: 10 secs           |           |      |      |           |      |      | X          |      |      | X          |      |      |
| Movement 4: 31 secs           |           |      |      |           |      |      |            | X    | X    |            | X    | X    |
| Movement 5: 0 secs            |           |      |      |           |      |      |            |      |      |            |      |      |
| Movement 6: 0 secs            |           |      |      |           |      |      |            |      |      |            |      |      |
| # of Lanes (#, S, P)          | 2         | 2    | S    | 2         | 2    | 1    | 2          | 2    | S    | 2          | 2    | S    |
| Unadjusted Volume             | 167       | 369  | 64   | 113       | 345  | 262  | 111        | 707  | 91   | 159        | 749  | 87   |
| Peak Hour Factor (PHF)        | 0.80      | 0.80 | 0.80 | 0.84      | 0.84 | 0.84 | 0.91       | 0.91 | 0.91 | 0.98       | 0.98 | 0.98 |
| Min/Ped Time Override (sec)   | 10        | 28   | 28   | 10        | 28   | 28   | 10         | 31   | 31   | 10         | 31   | 31   |
| Progression Adj. Factor (PAF) | 1.00      | 1.00 | -    | 1.00      | 1.00 | 1.00 | 1.00       | 1.00 | -    | 1.00       | 1.00 | -    |

Output

|                              | ***  |      |      | ***  |      |      | ***  |      |      | ***  |      |      |
|------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Peak Hour Volume (vph)       | 209  | 461  | 80   | 135  | 411  | 312  | 122  | 777  | 100  | 162  | 764  | 89   |
| Saturation Flow (vph)        | 3200 | 3600 | Shrd | 3200 | 3600 | 1800 | 3200 | 3600 | Shrd | 3200 | 3600 | Shrd |
| X or Volume/Capacity         | 0.64 | 0.46 | -    | 0.42 | 0.35 | 0.53 | 0.38 | 0.66 | -    | 0.50 | 0.65 | -    |
| Effective Green (sec)        | 8    | 26   | -    | 8    | 26   | 26   | 8    | 29   | -    | 8    | 29   | -    |
| Split Time (sec)             | 10   | 28   | -    | 10   | 28   | 28   | 10   | 31   | -    | 10   | 31   | -    |
| Min. Time or Ped. Time (sec) | 10   | 28   | -    | 10   | 28   | 28   | 10   | 31   | -    | 10   | 31   | -    |
| Delay - 15 min pk (sec/veh)  | 44   | 22   | -    | 37   | 21   | 25   | 36   | 24   | -    | 39   | 23   | -    |
| Level of Service (LOS)       | D    | C+   | -    | D+   | C+   | C+   | D+   | C+   | -    | D+   | C+   | -    |
| Average 'Q' (veh/ln)         | 2    | 4    | -    | 1    | 3    | 5    | 1    | 6    | -    | 2    | 6    | -    |
| Design 'Q'-ft/ln (1.5*Qavg)  | 60   | 120  | -    | 40   | 100  | 160  | 40   | 180  | -    | 60   | 180  | -    |
| Do Vehicles Clear?           | YES  | YES  | -    | YES  | YES  | YES  | YES  | YES  | -    | YES  | YES  | -    |

Summary of Results

|  |   |
|--|---|
| <b>Whole Intersection</b><br>Weighted Average Delay (seconds) = 26<br>Level of Service - LOS = C | <b>Critical Movements</b><br>Weighted Average Delay (seconds) = 29<br>Level of Service - LOS = C<br>Capacity Utilization - ICU/TCU = 0.59 |
| <b>Required Cycle Length is 79 sec</b><br><b>Min./Ped. Times Satisfied</b>                       |   |

**WEBSTER**  
**Webster Based Signal Timing Evaluation Routine**  
 For Capacity and Level of Service Analysis Using HCM 2000 Control Delay

**Central Ave at Mission Blvd PM**

**Central Ave at Mission Blvd**

**County of San Bernardino**

**PM Peak Hour**

**Parameter Values (using default set 'SANBAG (Existing)')**

| Parameter                     | Other | Default | Min. Time Parameter         | Other  | Default | Sat. Flow Parameter           | Other | Default |
|-------------------------------|-------|---------|-----------------------------|--------|---------|-------------------------------|-------|---------|
| Duration of Peak Period (min) |       | 15      | Min. Time (Left Turns, sec) |        | 10      | Sat Flow (1 Left lane, vphg)  | 1700  | 1800    |
| Lost Time (sec)               |       | 2       | Min/Ped Time (Thrus, sec)   | Varies | Varies  | Sat Flow (2 Left lanes, vphg) | 3200  | 3500    |
| Vehicle Length (feet)         |       | 20      |                             |        |         | Sat Flow (1 Thru lane, vphg)  | 1800  | 1900    |
|                               |       |         |                             |        |         | Sat Flow (1 Right lane, vphg) |       | 1800    |

**Input Values**

| Movement Times                | Eastbound |      |      | Westbound |      |      | Northbound |      |      | Southbound |      |      |
|-------------------------------|-----------|------|------|-----------|------|------|------------|------|------|------------|------|------|
|                               | *L*       | *T*  | R    | L         | T    | R    | L          | T    | R    | *L*        | *T*  | R    |
| Movement 1: 10 secs           | X         |      |      | X         |      |      |            |      |      |            |      |      |
| Movement 2: 28 secs           |           | X    | X    |           | X    | X    |            |      |      |            |      |      |
| Movement 3: 10 secs           |           |      |      |           |      |      | X          |      |      | X          |      |      |
| Movement 4: 31 secs           |           |      |      |           |      |      |            | X    | X    |            | X    | X    |
| Movement 5: 0 secs            |           |      |      |           |      |      |            |      |      |            |      |      |
| Movement 6: 0 secs            |           |      |      |           |      |      |            |      |      |            |      |      |
| # of Lanes (#, S, P)          | 2         | 2    | S    | 2         | 2    | 1    | 2          | 2    | S    | 2          | 2    | S    |
| Unadjusted Volume             | 187       | 567  | 121  | 135       | 304  | 202  | 131        | 811  | 95   | 196        | 873  | 110  |
| Peak Hour Factor (PHF)        | 0.94      | 0.94 | 0.94 | 0.90      | 0.90 | 0.90 | 1.00       | 1.00 | 1.00 | 0.95       | 0.95 | 0.95 |
| Min/Ped Time Override (sec)   | 10        | 28   | 28   | 10        | 28   | 28   | 10         | 31   | 31   | 10         | 31   | 31   |
| Progression Adj. Factor (PAF) | 1.00      | 1.00 | -    | 1.00      | 1.00 | 1.00 | 1.00       | 1.00 | -    | 1.00       | 1.00 | -    |

**Output**

|                              |      |      |      |      |      |      |      |      |      |      |      |      |
|------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Peak Hour Volume (vph)       | 199  | 603  | 129  | 150  | 338  | 224  | 131  | 811  | 95   | 206  | 919  | 116  |
| Saturation Flow (vph)        | 3200 | 3600 | Shrd | 3200 | 3600 | 1800 | 3200 | 3600 | Shrd | 3200 | 3600 | Shrd |
| X or Volume/Capacity         | 0.61 | 0.62 | -    | 0.46 | 0.29 | 0.38 | 0.40 | 0.69 | -    | 0.64 | 0.78 | -    |
| Effective Green (sec)        | 8    | 26   | -    | 8    | 26   | 26   | 8    | 29   | -    | 8    | 29   | -    |
| Split Time (sec)             | 10   | 28   | -    | 10   | 28   | 28   | 10   | 31   | -    | 10   | 31   | -    |
| Min. Time or Ped. Time (sec) | 10   | 28   | -    | 10   | 28   | 28   | 10   | 31   | -    | 10   | 31   | -    |
| Delay - 15 min pk (sec/veh)  | 42   | 25   | -    | 38   | 20   | 22   | 37   | 24   | -    | 43   | 27   | -    |
| Level of Service (LOS)       | D    | C+   | -    | D+   | C+   | C+   | D+   | C+   | -    | D    | C    | -    |
| Average 'Q' (veh/ln)         | 2    | 5    | -    | 1    | 2    | 3    | 1    | 6    | -    | 2    | 7    | -    |
| Design 'Q'-ft/ln (1.5*Qavg)  | 60   | 160  | -    | 40   | 60   | 100  | 40   | 180  | -    | 60   | 220  | -    |
| Do Vehicles Clear?           | YES  | YES  | -    | YES  | YES  | YES  | YES  | YES  | -    | YES  | YES  | -    |

**Summary of Results**

|  |   |
|--|---|
| <b>Whole Intersection</b><br>Weighted Average Delay (seconds) = 28<br>Level of Service - LOS = C | <b>Critical Movements</b><br>Weighted Average Delay (seconds) = 30<br>Level of Service - LOS = C<br>Capacity Utilization - ICU/TCU = 0.69 |
| <b>Required Cycle Length is 79 sec</b><br><b>Min./Ped. Times Satisfied</b>                       |   |

### PCI CALCULATION.

Intersection:

Central Ave @ Mission Blvd

Date:

05/15/2012

**AM**

| Time               | EB        |             |             | WB         |            |            | NB          |             |            | SB        |            |            | Total |
|--------------------|-----------|-------------|-------------|------------|------------|------------|-------------|-------------|------------|-----------|------------|------------|-------|
|                    | Rt        | Th          | Lt          | Rt         | Th         | Lt         | Rt          | Th          | Lt         | Rt        | Th         | Lt         |       |
| 7:30               | 16        | 104         | 48          | 86         | 95         | 27         | 15          | 188         | 33         | 21        | 152        | 32         | 817   |
| 7:45               | 15        | 101         | 42          | 76         | 106        | 26         | 31          | 180         | 24         | 19        | 154        | 28         | 802   |
| 8:00               | 14        | 87          | 36          | 47         | 68         | 21         | 14          | 162         | 26         | 23        | 194        | 54         | 746   |
| 8:15               | 17        | 64          | 35          | 50         | 76         | 27         | 23          | 157         | 28         | 24        | 147        | 33         | 681   |
| <b>Total Veh</b>   | <b>62</b> | <b>356</b>  | <b>161</b>  | <b>259</b> | <b>345</b> | <b>101</b> | <b>83</b>   | <b>687</b>  | <b>111</b> | <b>87</b> | <b>647</b> | <b>147</b> |       |
| <b>Car Only</b>    | <b>58</b> | <b>331</b>  | <b>150</b>  | <b>257</b> | <b>345</b> | <b>93</b>  | <b>78</b>   | <b>674</b>  | <b>111</b> | <b>87</b> | <b>579</b> | <b>139</b> |       |
| <b>Factor</b>      | 0.802083  |             |             | 0.835337   |            |            | 0.914195    |             |            | 0.981707  |            |            |       |
| <b>Trucks</b>      | 7%        |             |             | 3%         |            |            | 2%          |             |            | 3%        |            |            |       |
| Factor 2.5         | 4         | 25          | 11          | 2          | 0          | 8          | 5           | 13          | 0          | 0         | 68         | 8          |       |
| <b>PCI</b>         | <b>6</b>  | <b>37.5</b> | <b>16.5</b> | <b>5</b>   | <b>0</b>   | <b>20</b>  | <b>12.5</b> | <b>32.5</b> | <b>0</b>   | <b>0</b>  | <b>170</b> | <b>20</b>  |       |
| <b>Total (PCI)</b> | <b>64</b> | <b>369</b>  | <b>167</b>  | <b>262</b> | <b>345</b> | <b>113</b> | <b>91</b>   | <b>707</b>  | <b>111</b> | <b>87</b> | <b>749</b> | <b>159</b> |       |

**PM**

| Time               | EB         |             |            | WB         |            |            | NB        |            |            | SB         |             |            | Total |
|--------------------|------------|-------------|------------|------------|------------|------------|-----------|------------|------------|------------|-------------|------------|-------|
|                    | Rt         | Th          | Lt         | Rt         | Th         | Lt         | Rt        | Th         | Lt         | Rt         | Th          | Lt         |       |
| 4:30               | 32         | 151         | 56         | 54         | 77         | 23         | 25        | 189        | 32         | 18         | 201         | 55         | 913   |
| 4:45               | 20         | 121         | 50         | 50         | 81         | 33         | 21        | 200        | 21         | 33         | 194         | 32         | 856   |
| 5:00               | 40         | 132         | 38         | 39         | 60         | 39         | 28        | 214        | 28         | 32         | 229         | 54         | 933   |
| 5:15               | 28         | 157         | 41         | 53         | 83         | 35         | 18        | 184        | 45         | 24         | 223         | 49         | 940   |
| <b>Total Veh</b>   | <b>120</b> | <b>561</b>  | <b>185</b> | <b>196</b> | <b>301</b> | <b>130</b> | <b>92</b> | <b>787</b> | <b>126</b> | <b>107</b> | <b>847</b>  | <b>190</b> |       |
| <b>Car Only</b>    | <b>118</b> | <b>550</b>  | <b>181</b> | <b>192</b> | <b>295</b> | <b>127</b> | <b>90</b> | <b>771</b> | <b>123</b> | <b>105</b> | <b>830</b>  | <b>186</b> |       |
| <b>Factor</b>      | 0.939159   |             |            | 0.897661   |            |            | 0.995951  |            |            | 0.946791   |             |            |       |
| <b>Trucks</b>      | 2%         |             |            | 2%         |            |            | 2%        |            |            | 2%         |             |            |       |
| Factor 2.5         | 2          | 11          | 4          | 4          | 6          | 3          | 2         | 16         | 3          | 2          | 17          | 4          |       |
| <b>PCI</b>         | <b>3</b>   | <b>16.5</b> | <b>6</b>   | <b>10</b>  | <b>9</b>   | <b>7.5</b> | <b>5</b>  | <b>40</b>  | <b>7.5</b> | <b>5</b>   | <b>42.5</b> | <b>10</b>  |       |
| <b>Total (PCI)</b> | <b>121</b> | <b>567</b>  | <b>187</b> | <b>202</b> | <b>304</b> | <b>135</b> | <b>95</b> | <b>811</b> | <b>131</b> | <b>110</b> | <b>873</b>  | <b>196</b> |       |

Truck percentage based on 2010 counts

**CENTRAL AVE. @ MISSION BLVD.  
SAN BERNARDINO COUNTY**

**PUBLIC WORKS** File Name : **CENTRAL@MISSION120515**  
**TRAFFIC DIVISION** Site Code : **00000000**  
**Start Date** : **05/15/2012**  
**Page No** : **1**

Groups Printed- Unshifted

| Start Time  | CENTRAL AVE.<br>Northbound |      |      |      | CENTRAL AVE.<br>Southbound |      |      |      | MISSION BLVD.<br>Eastbound |      |      |      | MISSION BLVD.<br>Westbound |      |      |      | Int.<br>Total |
|-------------|----------------------------|------|------|------|----------------------------|------|------|------|----------------------------|------|------|------|----------------------------|------|------|------|---------------|
|             | Right                      | Thru | Left | Peds |               |
| Factor      | 1.0                        | 1.0  | 1.0  | 1.0  | 1.0                        | 1.0  | 1.0  | 1.0  | 1.0                        | 1.0  | 1.0  | 1.0  | 1.0                        | 1.0  | 1.0  | 1.0  |               |
| 07:00 AM    | 9                          | 119  | 24   | 0    | 20                         | 99   | 13   | 1    | 10                         | 57   | 31   | 2    | 36                         | 76   | 16   | 2    | 515           |
| 07:15 AM    | 13                         | 136  | 23   | 1    | 18                         | 123  | 25   | 1    | 19                         | 59   | 43   | 0    | 58                         | 104  | 23   | 0    | 646           |
| 07:30 AM    | 15                         | 188  | 33   | 0    | 21                         | 152  | 32   | 0    | 16                         | 104  | 48   | 1    | 86                         | 95   | 27   | 1    | 819           |
| 07:45 AM    | 31                         | 180  | 24   | 0    | 19                         | 154  | 28   | 0    | 15                         | 101  | 42   | 0    | 76                         | 106  | 26   | 0    | 802           |
| Total       | 68                         | 623  | 104  | 1    | 78                         | 528  | 98   | 2    | 60                         | 321  | 164  | 3    | 256                        | 381  | 92   | 3    | 2782          |
| 08:00 AM    | 14                         | 162  | 26   | 2    | 23                         | 194  | 54   | 1    | 14                         | 87   | 36   | 0    | 47                         | 68   | 21   | 0    | 749           |
| 08:15 AM    | 23                         | 157  | 28   | 1    | 24                         | 147  | 33   | 0    | 17                         | 64   | 35   | 3    | 50                         | 76   | 27   | 0    | 685           |
| 08:30 AM    | 13                         | 119  | 27   | 1    | 17                         | 121  | 24   | 0    | 10                         | 69   | 21   | 0    | 41                         | 77   | 23   | 0    | 563           |
| 08:45 AM    | 16                         | 153  | 34   | 1    | 23                         | 154  | 23   | 1    | 9                          | 68   | 36   | 2    | 53                         | 65   | 29   | 0    | 667           |
| Total       | 66                         | 591  | 115  | 5    | 87                         | 616  | 134  | 2    | 50                         | 288  | 128  | 5    | 191                        | 286  | 100  | 0    | 2664          |
| 04:00 PM    | 25                         | 206  | 28   | 1    | 36                         | 197  | 43   | 2    | 28                         | 110  | 54   | 5    | 47                         | 100  | 41   | 1    | 924           |
| 04:15 PM    | 28                         | 177  | 28   | 0    | 39                         | 198  | 35   | 1    | 39                         | 116  | 46   | 6    | 47                         | 87   | 25   | 0    | 872           |
| 04:30 PM    | 25                         | 189  | 32   | 2    | 18                         | 201  | 55   | 0    | 32                         | 151  | 56   | 1    | 54                         | 77   | 23   | 2    | 918           |
| 04:45 PM    | 21                         | 200  | 21   | 5    | 33                         | 194  | 32   | 2    | 20                         | 121  | 50   | 1    | 50                         | 81   | 33   | 0    | 864           |
| Total       | 99                         | 772  | 109  | 8    | 126                        | 790  | 165  | 5    | 119                        | 498  | 206  | 13   | 198                        | 345  | 122  | 3    | 3578          |
| 05:00 PM    | 28                         | 214  | 28   | 1    | 32                         | 229  | 54   | 2    | 40                         | 132  | 38   | 3    | 39                         | 60   | 39   | 1    | 940           |
| 05:15 PM    | 18                         | 184  | 45   | 1    | 24                         | 223  | 49   | 2    | 28                         | 157  | 41   | 3    | 53                         | 83   | 35   | 2    | 948           |
| 05:30 PM    | 36                         | 208  | 27   | 0    | 26                         | 208  | 40   | 0    | 32                         | 113  | 50   | 0    | 51                         | 65   | 27   | 2    | 885           |
| 05:45 PM    | 16                         | 168  | 20   | 1    | 14                         | 187  | 42   | 1    | 29                         | 136  | 40   | 1    | 39                         | 79   | 30   | 2    | 805           |
| Total       | 98                         | 774  | 120  | 3    | 96                         | 847  | 185  | 5    | 129                        | 538  | 169  | 7    | 182                        | 287  | 131  | 7    | 3578          |
| Grand Total | 331                        | 2760 | 448  | 17   | 387                        | 2781 | 582  | 14   | 358                        | 1645 | 667  | 28   | 827                        | 1299 | 445  | 13   | 12602         |
| Apprch %    | 9.3                        | 77.6 | 12.6 | 0.5  | 10.3                       | 73.9 | 15.5 | 0.4  | 13.3                       | 61.0 | 24.7 | 1.0  | 32.0                       | 50.3 | 17.2 | 0.5  |               |
| Total %     | 2.6                        | 21.9 | 3.6  | 0.1  | 3.1                        | 22.1 | 4.6  | 0.1  | 2.8                        | 13.1 | 5.3  | 0.2  | 6.6                        | 10.3 | 3.5  | 0.1  |               |