Appendix G.4.3  Addendum Haul Route Analysis
MEMORANDUM

To: Sergio Valdez
Los Angeles Department of Transportation

From: David S. Shender, P.E.
Corinna M. Gutierrez, P.E.
Linscott, Law & Greenspan, Engineers

Date: August 18, 2016

LLG Ref: 5-08-3744-2

Subject: Harvard-Westlake School Parking, Safety and Athletics Improvement Plan – Addendum Haul Route Traffic Analysis

This memorandum (the “Addendum Haul Route Traffic Analysis”) has been prepared by Linscott, Law & Greenspan, Engineers (“LLG”) to summarize the addendum to the supplementary traffic analysis prepared for the proposed Harvard-Westlake School Parking, Safety and Athletics Improvement Plan (the “Project”) located at 3701 Coldwater Canyon Avenue (the “Project Site”) in the Sherman Oaks-Studio City-Toluca Lake-Cahuenga Pass Plan area of the City of Los Angeles, California.

LLG previously prepared the traffic impact study\(^1\) dated October 30, 2012 for the Project (the “2012 Traffic Study”). The findings of the 2012 Traffic Study were confirmed based on the Los Angeles Department of Transportation (“LADOT”) assessment letter\(^2\) dated March 26, 2013. LLG also previously prepared a supplemental traffic analysis\(^3\) dated October 6, 2015 for the Project (the “2015 Supplemental Traffic Analysis”), which evaluated the potential traffic impacts related to the revised Project construction information.

This addendum evaluates the potential traffic impacts related to the updated haul route of trucks during the construction grading and material export phase of the Project. It should be noted that no other changes associated with construction-related activities of the Project have occurred since the preparation of the 2015 Supplemental Traffic Analysis. The following study intersection has been evaluated for potential traffic impacts during construction of the Project:

- Tujunga Avenue / Riverside Drive-Camarillo Street

Based on the addendum haul route traffic analysis contained herein, it is concluded that construction of the Project will not create significant impacts at the additional study intersection during the weekday and Saturday analyzed peak hours.

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Updated Haul Route Information

As discussed in the 2012 Traffic Study, regional access related to haul trucks coming to/from the Project Site is provided by the US-101 (Ventura) Freeway. During the construction grading and material export phase of the Project, inbound haul trucks would exit from the Northbound US-101 Freeway at Coldwater Canyon Avenue and continue south to the Project Site. Outbound haul trucks would exit the Project Site onto Coldwater Canyon Avenue, proceed to the Southbound US-101 Freeway, and carry the export material to a receptor site located within 35 miles of the Project Site.

Since the preparation of the 2012 Traffic Study and the 2015 Supplementary Traffic Analysis, the Vulcan Materials Company site located in the Sun Valley area of the City of Los Angeles has been identified as a potential receptor site for the excavated materials. Therefore, in addition to traveling on the US-101 Freeway, haul trucks will utilize the SR-170 (Hollywood) Freeway to travel to/from the Vulcan Materials site. As there is no freeway interchange between the US-101 and SR-170 freeways, this updated haul route will require the use of local City streets in addition to the segment of Coldwater Canyon Avenue analyzed in the 2012 Traffic Study. Specifically, inbound haul trucks traveling southbound on the SR-170 Freeway will exit via the Riverside Drive Off-Ramp and enter the Northbound US-101 Freeway via the Tujunga Avenue On-Ramp. Outbound haul trucks traveling southbound on the US-101 Freeway would exit via the Tujunga Avenue Off-Ramp and continue to the SR-170 Freeway via the Tujunga Avenue On-Ramp.

Thus, based on this updated haul route, the Tujunga Avenue/Riverside Drive-Camarillo Street intersection will be evaluated for potential impacts as part of this addendum haul route traffic analysis. The updated haul route and general project vicinity are shown in Figure 1. Again, it should be noted that no changes related to construction trip generation, hauling hours, or any other construction assumptions are proposed as part of this addendum haul route traffic analysis. The construction trip generation is provided for reference in Table 1 within the 2015 Supplemental Traffic Analysis.

Manual Traffic Counts

Manual traffic counts of vehicular turning movements were conducted at the study intersection during the weekday AM and PM commuter periods as well as on a Saturday during the midday commuter period to determine the peak hour traffic volumes, consistent with the 2015 Supplemental Traffic Analysis. The weekday manual traffic counts were conducted on Tuesday, May 31, 2016. The Saturday manual traffic counts were conducted on Saturday, May 28, 2016.

The weekday commuter AM and PM peak period manual counts of vehicle movements at the study intersections are summarized in Table 1. Note that the
manual traffic counts for the intersection were divided into three separate locations to account for all vehicle turning movements at the five-leg intersection. The three intersection counts were then combined to determine the overall peak hour traffic volumes during the weekday morning, weekday afternoon, and Saturday midday peak periods. The summary data worksheets of the manual traffic counts at the study intersection are provided in Appendix A attached to this memorandum. Also included in Appendix A are tables combining the three manual traffic counts for the study intersection to determine the overall peak hour traffic volumes.

**Updated Level of Service Analysis**

Pursuant to LADOT’s traffic study guidelines, Level of Service calculations have been prepared for the following scenarios for the study intersection to evaluate the traffic effects related to construction of the project:

(a) Existing (2016) conditions.
(b) Condition (a) with completion and occupancy of the Project.
(c) Condition (b) with implementation of Project mitigation measures where necessary.
(d) Condition (a) with two percent (2.0%) annual ambient traffic growth compounded through year 2019.
(e) Condition (d) with completion and occupancy of the Project.
(f) Condition (e) with implementation of Project mitigation measures where necessary.

**City of Los Angeles Impact Criteria and Thresholds**

Consistent with the 2012 Traffic Study and the 2015 Supplemental Traffic Analysis, the study intersection was evaluated using the Critical Movement Analysis (CMA) method of analysis that determines Volume-to-Capacity (v/c) ratios on a critical lane basis. The overall intersection v/c ratio is subsequently assigned a Level of Service (LOS) value to describe intersection operations. Level of Service varies from LOS A (free flow) to LOS F (jammed condition). A description of the CMA method and corresponding Level of Service is provided in Appendix B.

The relative impact of the added traffic volumes to be generated by construction of the Project during the weekday and Saturday analyzed peak hours was evaluated based on analysis of existing and future operating conditions at the study intersection. The significance of the potential impacts of Project-generated traffic was identified using the traffic impact criteria set forth in the LADOT’s *Traffic Study Policies and Procedures* manual, which is provided for reference on Table 9-1 within the 2012 Traffic Study.
Traffic Impact Analysis

The traffic impact analysis prepared for the study intersection using the Critical Movement Analysis (CMA) methodology and application of the City of Los Angeles significant traffic impact criteria is summarized in Table 2. The CMA data worksheets for the analyzed intersection during the weekday and Saturday analyzed peak hours are contained in Appendix B.

Existing + Project Conditions

Column [1] of Table 2 presents the existing v/c ratios and LOS at the study intersection during the weekday and Saturday analyzed peak hours based on the 2016 traffic counts. As presented in column [2] of Table 2, application of the City’s threshold criteria to the “Existing With Construction” scenario indicates that the construction phase of the Project is not anticipated to create a significant impact at any of the study intersections under existing conditions. Thus, no direct project mitigation measures are necessary.

Future + Project Conditions

Column [3] of Table 2 provides the forecast future without Project traffic conditions at the study intersection based on application of the City’s highly conservative 2% annual ambient growth traffic factor to year 2019. As presented in column [4] of Table 2, application of the City’s threshold criteria to the “Future With Construction” scenario indicates that construction of the Project is not anticipated to create a significant impact at the study intersection under future conditions. Thus, no direct Project mitigation measures are necessary.

Conclusion

In summary and based on the above, it is concluded that the updated haul route of trucks during the construction grading and material export phase of the Project is not expected to create significant traffic impacts at the additional study intersection of Tujunga Avenue/Riverside Drive-Camarillo Street. These findings are consistent with the 2015 Supplemental Traffic Analysis which concluded that the forecast construction traffic associated with the Project would also not result in significant traffic impacts at the study intersections. Accordingly, no additional analysis of traffic impacts is required or recommended as a result of construction-related activities of the Project.

Attachments

cc: File
## Table 1
**EXISTING TRAFFIC VOLUMES [1]**

### Commuter Peak Hours

<table>
<thead>
<tr>
<th>NO.</th>
<th>INTERSECTION</th>
<th>DATE</th>
<th>DIR</th>
<th>AM PEAK HOUR</th>
<th>PM PEAK HOUR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>BEGAN</td>
<td>VOLUME</td>
</tr>
<tr>
<td>6</td>
<td>Tujunga Avenue/ Riverside Drive - Camarillo Street</td>
<td>05/31/2016</td>
<td>NB</td>
<td>9:00</td>
<td>652</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>SB</td>
<td>7:00</td>
<td>721</td>
</tr>
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<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>WB</td>
<td>5:30</td>
<td>599</td>
</tr>
</tbody>
</table>

[1] Counts conducted by National Data & Surveying Services
## Table 2
### SUMMARY OF VOLUME TO CAPACITY RATIOS AND LEVELS OF SERVICE
### WEEKDAY AM AND PM, SATURDAY MID-DAY PEAK HOURS
### CONSTRUCTION TRAFFIC

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Tujunga Avenue/ Riverside Drive - Camarillo Street</td>
<td>AM 0.641 B</td>
<td>0.650 B</td>
<td>0.009 NO</td>
<td>0.686 B</td>
<td>0.695 B</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2PM 0.678 B</td>
<td>0.691 B</td>
<td>0.013 NO</td>
<td>0.726 C</td>
<td>0.738 C</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3PM 0.684 B</td>
<td>0.690 B</td>
<td>0.006 NO</td>
<td>0.732 C</td>
<td>0.738 C</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4PM 0.720 C</td>
<td>0.723 C</td>
<td>0.003 NO</td>
<td>0.770 C</td>
<td>0.773 C</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SAT 0.681 B</td>
<td>0.696 B</td>
<td>0.015 NO</td>
<td>0.729 C</td>
<td>0.744 C</td>
</tr>
</tbody>
</table>

(A) According to LADOT's "Traffic Study Policies and Procedures," August 2014, a transportation impact on an intersection shall be deemed significant in accordance with the following table:

<table>
<thead>
<tr>
<th>Final v/c</th>
<th>LOS</th>
<th>Project Related Increase in v/c</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 0.701 - 0.800</td>
<td>C</td>
<td>equal to or greater than 0.040</td>
</tr>
<tr>
<td>&gt; 0.801 - 0.900</td>
<td>D</td>
<td>equal to or greater than 0.020</td>
</tr>
<tr>
<td>&gt; 0.901</td>
<td>E, F</td>
<td>equal to or greater than 0.010</td>
</tr>
</tbody>
</table>

LINSINGTON, LAW GREENSPAN, engineers

LLG Ref. 5-08-3744-2
Harvard-Westlake Addendum Haul Route Analysis
APPENDIX A

MANUAL TRAFFIC COUNT DATA
## ITM Peak Hour Summary

**Prepared by:**

National Data & Surveying Services

### Project #: 16-5387-001

**City:** Los Angeles

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### Southbound Approach

#### Tujunga Ave and Riverside Dr, Los Angeles

<table>
<thead>
<tr>
<th>Time</th>
<th>Lanes</th>
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</thead>
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<td>AM</td>
<td>0</td>
</tr>
<tr>
<td>NOON</td>
<td>0</td>
</tr>
<tr>
<td>PM</td>
<td>64</td>
</tr>
</tbody>
</table>

- AM Peak Hour: 9:00 AM
- NOON Peak Hour: 12:00 PM
- PM Peak Hour: 3:00 PM

#### Lanes

- AM: 0
- NOON: 2
- PM: 1

- AM: 552
- NOON: 0
- PM: 956

**CONTROL**

Signalized

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### Northbound Approach

<table>
<thead>
<tr>
<th>Time</th>
<th>Lanes</th>
</tr>
</thead>
<tbody>
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<td>AM</td>
<td>814</td>
</tr>
<tr>
<td>NOON</td>
<td>0</td>
</tr>
<tr>
<td>PM</td>
<td>809</td>
</tr>
</tbody>
</table>

- AM: 814
- NOON: 0
- PM: 104

**Total Volume Per Leg**

---

### Total Ins & Outs

<table>
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<th>Leg</th>
<th>AM</th>
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<th>PM</th>
</tr>
</thead>
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<tr>
<td>North Leg</td>
<td>560</td>
<td>552</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>502</td>
<td>956</td>
<td></td>
</tr>
<tr>
<td></td>
<td>332</td>
<td>0</td>
<td>423</td>
</tr>
<tr>
<td></td>
<td>611</td>
<td>0</td>
<td>845</td>
</tr>
<tr>
<td>East Leg</td>
<td>567</td>
<td>0</td>
<td>624</td>
</tr>
<tr>
<td></td>
<td>423</td>
<td>0</td>
<td>525</td>
</tr>
<tr>
<td>West Leg</td>
<td>814</td>
<td>383</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>809</td>
<td>742</td>
<td></td>
</tr>
</tbody>
</table>

**Total Ins & Outs**

- North Leg: 1112
- East Leg: 1551
- West Leg: 1458
- South Leg: 990
# Intersection Turning Movement

**Prepared by:**
National Data & Surveying Services

**City:** Los Angeles

**Date:** 5/31/2016

<table>
<thead>
<tr>
<th>NS/ EW Streets:</th>
<th>Tujunga Ave</th>
<th>Tujunga Ave</th>
<th>Riverside Dr</th>
<th>Riverside Dr</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>NORTHBOUND</td>
<td>SOUTHBOUND</td>
<td>EASTBOUND</td>
<td>WESTBOUND</td>
</tr>
<tr>
<td>Lanes:</td>
<td>NL NT NR</td>
<td>SL ST SR</td>
<td>EL ET ER</td>
<td>WL WT WR</td>
</tr>
<tr>
<td>9:00 AM</td>
<td>4 75 18</td>
<td>4 106 12</td>
<td>42 88 25</td>
<td>52 86 24</td>
</tr>
<tr>
<td>9:15 AM</td>
<td>3 77 14</td>
<td>11 153 14</td>
<td>36 66 31</td>
<td>39 42 21</td>
</tr>
<tr>
<td>9:30 AM</td>
<td>5 65 14</td>
<td>5 122 8</td>
<td>39 105 32</td>
<td>63 82 27</td>
</tr>
<tr>
<td>9:45 AM</td>
<td>6 86 15</td>
<td>6 111 8</td>
<td>28 77 42</td>
<td>38 62 31</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TOTAL VOLUMES:</th>
<th>NL NT NR</th>
<th>SL ST SR</th>
<th>EL ET ER</th>
<th>WL WT WR</th>
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</thead>
<tbody>
<tr>
<td>9:00 AM</td>
<td>4.70% 79.37% 15.93% 4.64% 87.96% 7.02%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9:15 AM</td>
<td>4.70% 79.37% 15.93% 4.64% 87.96% 7.02%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9:30 AM</td>
<td>4.70% 79.37% 15.93% 4.64% 87.96% 7.02%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9:45 AM</td>
<td>4.70% 79.37% 15.93% 4.64% 87.96% 7.02%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PEAK HR START TIME:**
9:00 AM

**PEAK HR VOL:**
18 304 61 26 492 42 145 136 130 192 272 103 2121

**PEAK HR FACTOR:**
0.895 0.787 0.868 0.824 0.935

**CONTROL:** Signalized

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**UPD**

**APPROACH % x 1:**

<table>
<thead>
<tr>
<th>NS/ EW Streets:</th>
<th>Tujunga Ave</th>
<th>Tujunga Ave</th>
<th>Riverside Dr</th>
<th>Riverside Dr</th>
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<tbody>
<tr>
<td></td>
<td>NORTHBOUND</td>
<td>SOUTHBOUND</td>
<td>EASTBOUND</td>
<td>WESTBOUND</td>
</tr>
<tr>
<td>Lanes:</td>
<td>NL NT NR</td>
<td>SL ST SR</td>
<td>EL ET ER</td>
<td>WL WT WR</td>
</tr>
<tr>
<td>9:00 AM</td>
<td>0 3 1</td>
<td>0 0 0</td>
<td>0 0 0</td>
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<tr>
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<td>0 0 0</td>
<td>0 0 0</td>
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</tr>
<tr>
<td>9:30 AM</td>
<td>0 0 0</td>
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<tr>
<td>9:45 AM</td>
<td>0 0 0</td>
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<table>
<thead>
<tr>
<th>TOTAL VOLUMES:</th>
<th>NL NT NR</th>
<th>SL ST SR</th>
<th>EL ET ER</th>
<th>WL WT WR</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 AM</td>
<td>4.70% 79.37% 15.93% 4.64% 87.96% 7.02%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9:15 AM</td>
<td>4.70% 79.37% 15.93% 4.64% 87.96% 7.02%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9:30 AM</td>
<td>4.70% 79.37% 15.93% 4.64% 87.96% 7.02%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9:45 AM</td>
<td>4.70% 79.37% 15.93% 4.64% 87.96% 7.02%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**PEAK HR START TIME:**
9:00 AM

**PEAK HR VOL:**
18 304 61 26 492 42 145 136 130 192 272 103 2121

**PEAK HR FACTOR:**
0.895 0.787 0.868 0.824 0.935

**CONTROL:** Signalized
## Intersection Turning Movement

**Project ID:** 16-5387-001  
**City:** Los Angeles  
**Date:** 5/31/2016

### PM

<table>
<thead>
<tr>
<th>NS/ EW Streets</th>
<th>Tujunga Ave</th>
<th>Tujunga Ave</th>
<th>Riverside Dr</th>
<th>Riverside Dr</th>
<th>Uturns</th>
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</thead>
<tbody>
<tr>
<td>Lanes: NL NT NR SL ST SR EL ET ER WL WT WR TOTAL NB SB EB WB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2:00 PM</td>
<td>12</td>
<td>167</td>
<td>33</td>
<td>6</td>
<td>93</td>
</tr>
<tr>
<td>2:15 PM</td>
<td>8</td>
<td>117</td>
<td>21</td>
<td>6</td>
<td>102</td>
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<tr>
<td>2:30 PM</td>
<td>5</td>
<td>168</td>
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<td>5</td>
<td>108</td>
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<td>2:45 PM</td>
<td>9</td>
<td>140</td>
<td>22</td>
<td>5</td>
<td>112</td>
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<tr>
<td>3:00 PM</td>
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<td>177</td>
<td>36</td>
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<td>95</td>
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<td>8</td>
<td>118</td>
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<td>86</td>
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<td>10</td>
<td>182</td>
<td>29</td>
<td>6</td>
<td>98</td>
</tr>
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<td>67</td>
</tr>
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<td>4:15 PM</td>
<td>6</td>
<td>172</td>
<td>35</td>
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<td>179</td>
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<td>4:45 PM</td>
<td>5</td>
<td>164</td>
<td>24</td>
<td>4</td>
<td>72</td>
</tr>
<tr>
<td><strong>TOTAL VOLUMES:</strong></td>
<td>95</td>
<td>1873</td>
<td>319</td>
<td>69</td>
<td>1048</td>
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</tbody>
</table>

### Approach %'s

- **NL:** 4.15%  
- **NT:** 81.90%  
- **NR:** 13.95%  
- **SL:** 5.23%  
- **ST:** 79.39%  
- **SR:** 15.38%  
- **EL:** 24.16%  
- **ET:** 50.76%  
- **ER:** 25.08%  
- **WL:** 23.48%  
- **WT:** 52.99%  
- **WR:** 23.53%

### Peak HR Start Time

- **2:15 PM**

### Peak HR Vol

<table>
<thead>
<tr>
<th>Approach</th>
<th>NB</th>
<th>SB</th>
<th>EB</th>
<th>WB</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>215</td>
<td>215</td>
<td>215</td>
<td>215</td>
</tr>
</tbody>
</table>

### Peak HR Factor

- 0.817

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**CONTROL:** Signalized
ITM Peak Hour Summary

Prepared by:
National Data & Surveying Services

Date: 5/31/2016
Day: Tuesday

Tujunga Ave and Riverside Dr, Los Angeles

Southbound Approach

<table>
<thead>
<tr>
<th>Lanes</th>
<th>AM</th>
<th>NOON</th>
<th>PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
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<table>
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<th>NOON</th>
<th>PM</th>
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<tbody>
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Like and Control

signalized

<table>
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<th>PM</th>
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<tbody>
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Northbound Approach

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<td>10:00 AM</td>
</tr>
<tr>
<td>NOON</td>
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</tr>
<tr>
<td>PM</td>
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Total Volume Per Leg

<table>
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<tbody>
<tr>
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Total Ins & Outs

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Project #: 165387-101
City: Los Angeles

AM Peak Hour 9:00 AM
NOON Peak Hour 400 PM
PM Peak Hour 4:00 PM
### Intersection Turning Movement

**Prepared by:**
National Data & Surveying Services

**Day:** Tuesday

**Date:** 5/31/2016

**City:** Los Angeles

<table>
<thead>
<tr>
<th>NS/ EW Streets</th>
<th>Tujunga Ave</th>
<th>Tujunga Ave</th>
<th>Riverside Dr</th>
<th>Riverside Dr</th>
<th>UTurns</th>
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<tbody>
<tr>
<td><strong>LANES:</strong></td>
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<td>NT</td>
<td>NR</td>
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**TOTAL VOLUMES:**

| NL | NT | NR | SL | ST | SR | EL | ET | ER | WL | WT | WR | TOTAL |
| 133 | 53 | 12 | 0 | 161 | 0 | 0 | 0 | 457 | 32 | 0 | 0 | 848 |

**APPROACH %'s:**

| NL | NT | NR | SL | ST | SR | EL | ET | ER | WL | WT | WR | TOTAL |
| 133 | 53 | 12 | 0 | 161 | 0 | 0 | 0 | 457 | 32 | 0 | 0 | 848 |

**PEAK HR START TIME:**
9:00 AM

**PEAK HR VOL:**

| NL | NT | NR | SL | ST | SR | EL | ET | ER | WL | WT | WR | TOTAL |
| 133 | 53 | 12 | 0 | 161 | 0 | 0 | 0 | 457 | 32 | 0 | 0 | 848 |

**PEAK HR FACTOR:**

| NL | NT | NR | SL | ST | SR | EL | ET | ER | WL | WT | WR | TOTAL |
| 133 | 53 | 12 | 0 | 161 | 0 | 0 | 0 | 457 | 32 | 0 | 0 | 848 |

**CONTROL:** Signalized
### Intersection Turning Movement

**Prepared by:**
National Data & Surveying Services

**Project ID:** 16-5387-101

**City:** Los Angeles

**Date:** 5/31/2016

**Day:** Tuesday

#### North/South (NS) Streets:
- Tujunga Ave
- Riverside Dr

#### East/West (EW) Streets:
- Tujunga Ave
- Riverside Dr

#### Time Periods:
- 2:00 PM
- 2:15 PM
- 2:30 PM
- 2:45 PM
- 3:00 PM
- 3:15 PM
- 3:30 PM
- 3:45 PM
- 4:00 PM
- 4:15 PM
- 4:30 PM
- 4:45 PM

#### Lanes and Volumes

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<th>WR</th>
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#### Total Volumes

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#### Approach %’s

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**MID 2:15 PM:**
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### Signalized

**Riverside Dr NS/EW Streets:**
- Tujunga Ave
- Riverside Dr

**PM Start Time:**
- 2:15 PM

**Peak Hour Volume:**
- 297
- 96
- 26
- 0
- 60
- 0
- 0
- 300
- 17
- 0
- 0
- 796

**Peak Hour Factor:**
- 0.944
- 0.798
- 0.843
- 0.607
- 0.975

**Control:** Signalized
ITM Peak Hour Summary

Prepared by:
National Data & Surveying Services

Date: 5/31/2016
Day: Tuesday

Tujunga Ave and Riverside Dr, Los Angeles

Southbound Approach

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<th>PM PM</th>
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Westbound Approach

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Northbound Approach

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<td>10:00 AM</td>
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<tr>
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<tr>
<td>PM</td>
<td>2:00 PM</td>
<td>5:00 PM</td>
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</tbody>
</table>

Total Ins & Outs

- North Leg: AM 000 AM 0, NOON 0, PM 0
- East Leg: AM 000 AM 0, NOON 0, PM 0
- West Leg: AM 000 AM 0, NOON 0, PM 0
- South Leg: AM 000 AM 0, NOON 0, PM 0

Total Volume Per Leg

- North Leg: AM 0, NOON 0, PM 0
- East Leg: AM 49 0 22, NOON 0 0 0, PM 50 0 24
- West Leg: AM 49 0 50, NOON 0 0 0, PM 22 0 24
- South Leg: AM 0 0 0, NOON 0 0 0, PM 0 0 0

City: Los Angeles
Project #: 16-5387-201

AM Peak Hour: 9:00 AM
NOON Peak Hour: 11:00 AM
PM Peak Hour: 2:00 PM

Signalized

CONTROL

000 000 000 Lanes
# Intersection Turning Movement

**Prepared by:**
National Data & Surveying Services

**Date:** 5/31/2016

**Project ID:** 16-5387-201

**City:** Los Angeles

**Day:** Tuesday

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<table>
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<tr>
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<tr>
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**PEAK HR START TIME:** 9:00 AM

**PEAK HR VOL:** 49 22 0 0 0 0 0 0 71

**PEAK HR FACTOR:** 0.740

**CONTROL:** Signalized
### Intersection Turning Movement

**Prepared by:**  
National Data & Surveying Services

**Project ID:** 16-5387-201  
**City:** Los Angeles  
**Date:** 5/31/2016

#### NG/ EW Streets:

<table>
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<tr>
<th></th>
<th>Tujunga Ave</th>
<th>Tujunga Ave</th>
<th>Riverside Dr</th>
<th>Riverside Dr</th>
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<td>0</td>
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<tr>
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<td>13</td>
<td>0</td>
<td>6</td>
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<td>0</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>17</td>
</tr>
<tr>
<td>3:45 PM</td>
<td>6</td>
<td>0</td>
<td>6</td>
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<td>0</td>
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<td>0</td>
<td>12</td>
</tr>
<tr>
<td>4:00 PM</td>
<td>9</td>
<td>0</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
<td>0</td>
<td>0</td>
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<td>13</td>
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<tr>
<td>4:15 PM</td>
<td>10</td>
<td>0</td>
<td>6</td>
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<td>0</td>
<td>0</td>
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<td>0</td>
<td>0</td>
<td>16</td>
</tr>
<tr>
<td>4:30 PM</td>
<td>7</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
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<td>0</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>4:45 PM</td>
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<td>0</td>
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</table>

#### TOTAL VOLUMES:

<table>
<thead>
<tr>
<th></th>
<th>NL 127</th>
<th>NT 68</th>
<th>SL 0</th>
<th>ST 0</th>
<th>SR 0</th>
<th>EL 0</th>
<th>ET 0</th>
<th>ER 0</th>
<th>WL 0</th>
<th>WT 0</th>
<th>WR 0</th>
<th>TOTAL 199</th>
</tr>
</thead>
<tbody>
<tr>
<td>APPROACH %</td>
<td></td>
<td></td>
<td>127.0</td>
<td>68.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

**PEAK HR START TIME:**  
2:30 PM

**PEAK HR VOL:**  
<table>
<thead>
<tr>
<th></th>
<th>NB 0</th>
<th>SB 0</th>
<th>EB 0</th>
<th>WB 0</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2:30 PM</td>
<td>0</td>
<td>24</td>
<td>0</td>
<td>0</td>
<td>74</td>
</tr>
</tbody>
</table>

**PEAK HR FACTOR:**  
0.841

**CONTROL:** Signalized
### Intersection Turning Movement

**Prepared by:**
National Data & Surveying Services

**City:** Los Angeles
**Date:** 5/28/2016

<table>
<thead>
<tr>
<th>HS/ EW Streets:</th>
<th>Tujunga Ave</th>
<th>Tujunga Ave</th>
<th>Riverside Dr</th>
<th>Riverside Dr</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Northbound</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lanes</td>
<td>NL NT NR SL ST SR EL ET ER WL WT WR TOTAL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1:00 PM</td>
<td>7 66 24 13 57 4 40 88 36 50 67 28 469</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1:15 PM</td>
<td>15 110 29 15 87 18 29 85 38 39 58 21 544</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>1:30 PM</td>
<td>4 121 23 14 79 11 38 97 61 60 62 38 608</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1:45 PM</td>
<td>10 127 26 23 107 13 39 99 62 59 64 26 655</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>2:00 PM</td>
<td>7 142 24 15 80 17 42 95 58 44 69 32 625</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>2:15 PM</td>
<td>6 107 24 19 79 11 32 76 59 56 53 36 558</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>2:30 PM</td>
<td>10 135 22 18 74 12 39 108 76 41 54 33 622</td>
<td>1</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>2:45 PM</td>
<td>2 100 22 11 84 10 50 121 89 48 64 33 634</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total Volumes:</strong></td>
<td>61 908 184 128 647 96 309 769 478 397 491 247 4715</td>
<td>3</td>
<td>7</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Approaches %</th>
<th>N 5.29%</th>
<th>W 78.75%</th>
<th>E 15.96%</th>
<th>S 14.70%</th>
<th>NS 74.28%</th>
<th>SE 11.02%</th>
<th>NW 19.86%</th>
<th>NE 49.42%</th>
<th>SW 30.72%</th>
<th>NSW 34.98%</th>
<th>SEW 34.98%</th>
<th>NSEW 21.76%</th>
</tr>
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</table>

**Total**

**Peak HR Start Time:** 1:45 PM

<table>
<thead>
<tr>
<th>Peak HR Vol</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>WESTBOUND</td>
<td>NORTHBOUND</td>
</tr>
<tr>
<td>33 511 96 75 340 53</td>
<td>152 378 255</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Peak HR Factor</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.925 0.818 0.880</td>
<td>0.951 0.939</td>
</tr>
</tbody>
</table>

**Control:** Signalized
# Intersection Turning Movement

**Prepared by:**
National Data & Surveying Services

**Project ID:** 16-5387-101

**City:** Los Angeles

**Date:** 5/28/2016

## HS/ EW Streets:

<table>
<thead>
<tr>
<th></th>
<th>Tujunga Ave</th>
<th>Tujunga Ave</th>
<th>Riverside Dr</th>
<th>Riverside Dr</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NORTHBOUND</td>
<td>SOUTHBOUND</td>
<td>EAST Bound</td>
<td>WEST Bound</td>
</tr>
<tr>
<td>LANES:</td>
<td>NL NT NR SL ST SR EL ET ER WL WT WR TOTAL</td>
<td>NL NT NR SL ST SR EL ET ER WL WT WR TOTAL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1:00 PM</td>
<td>30 34 5 0 11 0 0 0 36 4 0 0 130</td>
<td>1 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1:15 PM</td>
<td>57 30 7 0 8 0 0 0 47 6 0 0 155</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1:30 PM</td>
<td>51 12 5 0 6 0 0 0 79 2 0 0 155</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1:45 PM</td>
<td>46 22 9 0 14 0 0 0 47 0 0 0 138</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2:00 PM</td>
<td>42 24 8 0 7 0 0 0 58 3 0 0 142</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2:15 PM</td>
<td>66 36 6 0 13 0 0 0 57 3 0 0 180</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2:30 PM</td>
<td>39 11 5 0 10 0 0 0 41 1 0 0 107</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2:45 PM</td>
<td>46 24 7 0 9 0 0 0 57 1 0 0 144</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## TOTAL VOLUMES:

<table>
<thead>
<tr>
<th></th>
<th>NB SB EB WB TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>377</td>
<td>192 52 0 78 0 0 0 0 422 20 0 0 1141 0 0 0</td>
</tr>
</tbody>
</table>

## APPROACH %:

<table>
<thead>
<tr>
<th></th>
<th>NB SB EB WB TOTAL</th>
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</thead>
<tbody>
<tr>
<td>60.71%</td>
<td>30.92% 8.37% 0.00% 100.00% 0.00% 0.00% 100.00% 0.00% 100.00% 0.00% 1.00%</td>
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</tbody>
</table>

## PEAK HR START TIME:

<table>
<thead>
<tr>
<th></th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>130 PM</td>
<td>205 93 28 0 40 0 0 0 241 8 0 0 615</td>
</tr>
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## PEAK HR FACTOR:

<table>
<thead>
<tr>
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<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.762</td>
<td>0.714 0.763 0.667 0.854</td>
</tr>
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**CONTROL:** Signalized
**ITM Peak Hour Summary**

**Prepared by:** National Data & Surveying Services

**Tujunga Ave and Riverside Dr, Los Angeles**

<table>
<thead>
<tr>
<th>Date: 5/28/2016</th>
<th>Day: Saturday</th>
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**Southbound Approach**

<table>
<thead>
<tr>
<th>Lanes</th>
<th>AM</th>
<th>NOON</th>
<th>PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
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<td>0</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
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</tbody>
</table>

**Northbound Approach**

<table>
<thead>
<tr>
<th>Lanes</th>
<th>AM</th>
<th>NOON</th>
<th>PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>49</td>
<td>0</td>
<td>21</td>
<td></td>
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<tr>
<td>0</td>
<td>1.5</td>
<td>1.5</td>
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**Total Ins & Outs**

<table>
<thead>
<tr>
<th>Count Periods</th>
<th>Start</th>
<th>End</th>
</tr>
</thead>
<tbody>
<tr>
<td>AM</td>
<td>NONE</td>
<td>NONE</td>
</tr>
<tr>
<td>NOON</td>
<td>1:00 PM</td>
<td>2:45 PM</td>
</tr>
<tr>
<td>PM</td>
<td>NONE</td>
<td>NONE</td>
</tr>
</tbody>
</table>

**Total Volume Per Leg**

<table>
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<tr>
<th>Leg</th>
<th>AM</th>
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<th>PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Leg</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>East Leg</td>
<td>0</td>
<td>49</td>
<td>0</td>
</tr>
<tr>
<td>West Leg</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>South Leg</td>
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<td>0</td>
</tr>
</tbody>
</table>

**Date:** 5/28/2016  **City:** Los Angeles

**Project #:** 16-5387-201

**Tujunga Ave and Riverside Dr, Los Angeles**

**AM Peak Hour**

**NOON Peak Hour** 1:00 PM

**PM Peak Hour**

**AM Peak Hour**

**NOON Peak Hour** 1:00 PM

**PM Peak Hour**
## Intersection Turning Movement

**Prepared by:** National Data & Surveying Services

### Date: Saturday

### City: Los Angeles

### Date: 5/28/2016

#### HS/ EW Streets:

<table>
<thead>
<tr>
<th></th>
<th>Tujunga Ave</th>
<th>Tujunga Ave</th>
<th>Riverside Dr</th>
<th>Riverside Dr</th>
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</thead>
<tbody>
<tr>
<td><strong>NOON</strong></td>
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**LANES:**

<table>
<thead>
<tr>
<th></th>
<th>NL</th>
<th>NT</th>
<th>NR</th>
<th>SL</th>
<th>ST</th>
<th>SR</th>
<th>EL</th>
<th>ET</th>
<th>ER</th>
<th>WL</th>
<th>WT</th>
<th>WR</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
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<td>6</td>
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<td>0</td>
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<td>0</td>
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<td>0</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>1:15 PM</td>
<td>4</td>
<td>0</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>1:30 PM</td>
<td>6</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>1:45 PM</td>
<td>23</td>
<td>0</td>
<td>6</td>
<td>0</td>
<td>0</td>
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<td>0</td>
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<td>0</td>
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<tr>
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<td>3</td>
<td>0</td>
<td>0</td>
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<td>0</td>
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<td>0</td>
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<td>0</td>
<td>0</td>
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<td>0</td>
<td>17</td>
</tr>
<tr>
<td>2:30 PM</td>
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<td>0</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td>2:45 PM</td>
<td>9</td>
<td>0</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<td>0</td>
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</table>

**TOTAL VOLUMES:**

<table>
<thead>
<tr>
<th></th>
<th>NB</th>
<th>SB</th>
<th>EB</th>
<th>WB</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>74</td>
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<td>102</td>
</tr>
</tbody>
</table>

**APPROACH %s:**

<table>
<thead>
<tr>
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<th>SB</th>
<th>EB</th>
<th>WB</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>72.55%</td>
<td>0.00%</td>
<td>27.45%</td>
<td>#DIV/0!</td>
</tr>
</tbody>
</table>

**PEAK HR START TIME:**

<table>
<thead>
<tr>
<th></th>
<th>145 PM</th>
</tr>
</thead>
</table>

**PEAK HR VOL:**

<table>
<thead>
<tr>
<th></th>
<th>49</th>
<th>0</th>
</tr>
</thead>
</table>

**CONTROL:** Signalized
### APPENDIX A TABLE 1
COMBINED TRAFFIC COUNTS (9:00 AM to 10:00 AM)
Tujunga Avenue / Riverside Drive - Camarillo Street

**Project ID:** 16-5387-001, 16-5387-101, 16-5387-201

**Day:** Tuesday

**City:** Los Angeles

**Date:** 5/31/2016

<table>
<thead>
<tr>
<th>NS/ EW Streets:</th>
<th>Tujunga Ave</th>
<th>Tujunga Ave</th>
<th>Riverside Dr</th>
<th>Camarillo St</th>
<th>Riverside Dr</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LANES:</strong></td>
<td>NL</td>
<td>NT</td>
<td>NR</td>
<td>SL</td>
<td>ST</td>
</tr>
<tr>
<td>9:00 AM</td>
<td>4</td>
<td>76</td>
<td>20</td>
<td>43</td>
<td>106</td>
</tr>
<tr>
<td>9:15 AM</td>
<td>3</td>
<td>77</td>
<td>21</td>
<td>58</td>
<td>153</td>
</tr>
<tr>
<td>9:30 AM</td>
<td>5</td>
<td>65</td>
<td>18</td>
<td>38</td>
<td>122</td>
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<tr>
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<td>86</td>
<td>24</td>
<td>48</td>
<td>111</td>
</tr>
</tbody>
</table>

**PEAK HR START TIME:** 9:00 AM

**PEAK HR VOL:** 18 304 83 187 492 42 145 336 587 224 272 103 182 53 12 3040

**CONTROL:** Signalized

LinScott, Law & Greenspan, engineers

LLG Ref. 5-08-3744-2

Harvard-Westlake School Parking Improvement Plan Addendum
**APPENDIX A TABLE 2**

**COMBINED TRAFFIC COUNTS (2:00 PM to 5:00 PM)**

Tujunga Avenue / Riverside Drive - Camarillo Street

**Project ID:** 16-5387-001, 16-5387-101, 16-5387-201

**Day:** Tuesday

**Date:** 5/31/2016

**City:** Los Angeles

<table>
<thead>
<tr>
<th>NS/ EW Streets:</th>
<th>Tujunga Ave</th>
<th>Tujunga Ave</th>
<th>Riverside Dr</th>
<th>Camarillo St</th>
<th>Riverside Dr</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>P</strong></td>
<td><strong>O</strong></td>
<td><strong>H</strong></td>
<td><strong>R</strong></td>
<td><strong>A</strong></td>
<td><strong>B</strong></td>
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<tr>
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**PEAK HR START TIME:** 230 PM

**PEAK HR VOL:**

| 2:00 PM | 32 | 622 | 129 |
| 2:15 PM | 60 | 393 | 56 |
| 2:30 PM | 209 | 409 | 549 |
| 2:45 PM | 162 | 333 | 145 |
| 3:00 PM | 306 | 112 | 22 |

**TOTAL:** 3539

**CONTROL:** Signalized
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<th>Tujunga Ave</th>
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<th>Camarillo St</th>
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<td>NR</td>
<td>SL</td>
<td>ST</td>
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<td>24</td>
<td>57</td>
</tr>
<tr>
<td>1:15 PM</td>
<td>15</td>
<td>110</td>
<td>32</td>
<td>23</td>
<td>87</td>
</tr>
<tr>
<td>1:30 PM</td>
<td>4</td>
<td>121</td>
<td>24</td>
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<tr>
<td>1:45 PM</td>
<td>10</td>
<td>127</td>
<td>32</td>
<td>37</td>
<td>107</td>
</tr>
<tr>
<td>2:00 PM</td>
<td>7</td>
<td>142</td>
<td>27</td>
<td>22</td>
<td>80</td>
</tr>
<tr>
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<td>107</td>
<td>31</td>
<td>32</td>
<td>79</td>
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<tr>
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<td></td>
</tr>
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**APPENDIX A TABLE 3**

**COMBINED TRAFFIC COUNTS (1:00 PM to 3:00 PM)**

**Tujunga Avenue / Riverside Drive - Camarillo Street**

**Project ID:** 16-5387-001, 16-5387-101, 16-5387-201

**City:** Los Angeles

**Date:** 5/28/2016

**TOTALS**
## APPENDIX A TABLE 1
### COMBINED TRAFFIC COUNTS (9:00 AM to 10:00 AM)
Tujunga Avenue / Riverside Drive - Camarillo Street

**Project ID:** 16-5387-001, 16-5387-101, 16-5387-201

**Day:** Tuesday

**City:** Los Angeles

**Date:** 5/31/2016

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<th></th>
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</thead>
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<td><strong>Tujunga Ave</strong></td>
<td><strong>Riverside Dr</strong></td>
<td><strong>Camarillo St</strong></td>
<td><strong>Riverside Dr</strong></td>
</tr>
<tr>
<td><strong>LANES:</strong></td>
<td><strong>NL</strong></td>
<td><strong>NT</strong></td>
<td><strong>NR</strong></td>
<td><strong>SL</strong></td>
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**PEAK HR START TIME:** 9:00 AM

| **PEAK HR VOL:** | 18 | 304 | 83 | 187 | 492 | 42 | 145 | 336 | 587 | 224 | 272 | 103 | 182 | 53 | 12 | 3040 |

**CONTROL:** Signalized
### APPENDIX A TABLE 2
COMBINED TRAFFIC COUNTS (2:00 PM to 5:00 PM)
Tujunga Avenue / Riverside Drive - Camarillo Street

**Project ID:** 16-5387-001, 16-5387-101, 16-5387-201

**Day:** Tuesday  
**Date:** 5/31/2016

**City:** Los Angeles

<table>
<thead>
<tr>
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<th>PM</th>
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<th>Total</th>
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</tr>
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<td></td>
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<td>1232</td>
<td>230 PM</td>
</tr>
<tr>
<td></td>
<td>2:30 PM</td>
<td>1197</td>
<td>230 PM</td>
</tr>
<tr>
<td></td>
<td>2:45 PM</td>
<td>1187</td>
<td>230 PM</td>
</tr>
<tr>
<td></td>
<td>3:00 PM</td>
<td>1152</td>
<td>230 PM</td>
</tr>
<tr>
<td></td>
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<td>230 PM</td>
</tr>
<tr>
<td></td>
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<td>1117</td>
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<td>230 PM</td>
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**Peak HR Vol:** 3539

**CONTROL:** Signalized
# APPENDIX A TABLE 3

**COMBINED TRAFFIC COUNTS (1:00 PM to 3:00 PM)**

Tujunga Avenue / Riverside Drive - Camarillo Street

**Project ID:** 16-5387-001, 16-5387-101, 16-5387-201

**City:** Los Angeles

**Date:** 5/28/2016

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<tr>
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<th>Tujunga Ave</th>
<th>Riverside Dr</th>
<th>Camarillo St</th>
<th>Riverside Dr</th>
</tr>
</thead>
<tbody>
<tr>
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<td>NR</td>
<td>SL</td>
<td>ST</td>
</tr>
<tr>
<td><strong>1:00 PM</strong></td>
<td>7</td>
<td>66</td>
<td>15</td>
<td>24</td>
<td>57</td>
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<tr>
<td><strong>1:15 PM</strong></td>
<td>15</td>
<td>110</td>
<td>32</td>
<td>23</td>
<td>87</td>
</tr>
<tr>
<td><strong>1:30 PM</strong></td>
<td>4</td>
<td>121</td>
<td>24</td>
<td>20</td>
<td>79</td>
</tr>
<tr>
<td><strong>1:45 PM</strong></td>
<td>10</td>
<td>127</td>
<td>32</td>
<td>37</td>
<td>107</td>
</tr>
<tr>
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<td>27</td>
<td>22</td>
<td>80</td>
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<tr>
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<td>79</td>
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<td>10</td>
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<td>27</td>
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<td>74</td>
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<tr>
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<td>84</td>
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**PEAK HR START TIME:** 1:30 PM

**PEAK HR VOL:**

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<td>27</td>
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<tr>
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**CONTROL:** Signalized
APPENDIX B

CMA AND LEVELS OF SERVICE EXPLANATION

CMA DATA WORKSHEETS – WEEKDAY AM AND PM PEAK HOURS
CMA DESCRIPTION

Level of Service is a term used to describe prevailing conditions and their effect on traffic. Broadly interpreted, the Level of Service concept denotes any one of a number of differing combinations of operating conditions which may take place as a roadway is accommodating various traffic volumes. Level of Service is a qualitative measure of the effect of such factors as travel speed, travel time, interruptions, freedom to maneuver, safety, driving comfort and convenience.

Six Levels of Service, A through F, have been defined in the 1965 Highway Capacity Manual. Level of Service A describes a condition of free flow, with low traffic volumes and relatively high speeds, while Level of Service F describes forced traffic flow at low speeds with jammed conditions and queues which cannot clear during the green phases.

Critical Movement Analysis (CMA) is a procedure which provides a capacity and level of service geometry and traffic signal operation and results in a level of service determination for the intersection as a whole operating unit.

The per lane volume for each movement in the intersection is determined and the per lane intersection capacity based on the Transportation Research Board (TRB) Report 212 (Interim Materials on Highway Capacity). The resulting CMA represents the ratio of the intersection's cumulative volume over its respective capacity (V/C ratio). Critical Movement Analysis takes into account lane widths, bus and truck operations, pedestrian activity and parking activity, as well as number of lanes and geometrics.

The Level of Service (abbreviated from the Highway Capacity Manual) are listed here with their corresponding CMA and Load Factor equivalents. Load Factor is that proportion of the signal cycles during the peak hour which are fully loaded; i.e. when all of the vehicles waiting at the beginning of green are not able to clear on that green phase.

<table>
<thead>
<tr>
<th>Critical Movement Analysis Characteristics</th>
<th>Level of Service</th>
<th>Load Factor</th>
<th>Equivalent CMA</th>
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<td>A (free flow)</td>
<td>0.0</td>
<td>0.00 - 0.60</td>
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</tr>
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<td>B (rural design)</td>
<td>0.0 - 0.1</td>
<td>0.61 - 0.70</td>
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</tr>
<tr>
<td>C (urban design)</td>
<td>0.1 - 0.3</td>
<td>0.71 - 0.80</td>
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</tr>
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<td>D (maximum urban design)</td>
<td>0.3 - 0.7</td>
<td>0.81 - 0.90</td>
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<td>E (capacity)</td>
<td>0.7 - 1.0</td>
<td>0.91 - 1.00</td>
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</tr>
<tr>
<td>F (force flow)</td>
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<td>Not Applicable</td>
<td></td>
</tr>
</tbody>
</table>

SERVICE LEVEL A
There are no loaded cycles and few are even close to loaded at this service level. No approach phase is fully utilized by traffic and no vehicle waits longer than one red indication.

SERVICE LEVEL B
This level represents stable operation where an occasional approach phase is fully utilized and a substantial number are approaching full use. Many drivers begin to feel restricted within platoons of vehicles.

SERVICE LEVEL C
At this level stable operation continues. Loading is still intermittent but more frequent than at Level B. Occasionally drivers may have to wait through more one red signal indication and backups may develop behind turning vehicles. Most drivers feel somewhat restricted, but not objectionably so.

SERVICE LEVEL D
This level encompasses a zone of increasing restriction approaching instability at the intersection. Delays to approaching vehicles may be substantial during short peaks within the peak hour, but enough cycles with lower demand occur to permit periodic clearance of queues, thus preventing excessive backups. Drivers frequently have to wait through more than one red signal. This level is the lower limit of acceptable operation to most drivers.

SERVICE LEVEL E
This represents near capacity and capacity operation. At capacity (CMA = 1.0) it represents the most vehicles that the particular intersection can accommodate. However, full utilization of every signal cycle is seldom attained no matter how great the demand. At this level all drivers wait through more than one red signal, and frequently through several.

SERVICE LEVEL F
Jammed conditions. Traffic backed up from a downstream location on one of the street restricts or prevents movement of traffic through the intersection under consideration.
<table>
<thead>
<tr>
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Assumptions:
Maximum Sum of Critical Volumes (Intersection Capacity): 2 Phase=1500, 3 Phase=1425, 4 Phase=1375, Unsignalized=1200.
For dual turn lanes, 55% of volume is assigned to heavier lane.
For one excl. and one opt. turn lane, 55% of volume is assigned to exclusive lane.
Right turns on red from excl. lanes = 50% of overlapping left turn.

10:14 AM
**CRITICAL MOVEMENT ANALYSIS**

**Tujunga Avenue @ Riverside Drive - Camarillo Street**

**N-S St:** Tujunga Avenue  
**E-W St:** Riverside Drive - Camarillo Street  
**Annual Growth:** 2.0%  
**Buildout Year:** 2019  
**Date of Count:** 2016  
**Counts by:** National Data & Surveying Services  
**File Name:** CMA1

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**Assumptions:**  
- Maximum Sum of Critical Volumes (Intersection Capacity): 2 Phase=1500, 3 Phase=1425, 4+ Phase=1375, Unsignalized=1200.  
- For dual turn lanes, 55% of volume is assigned to heavier lane.  
- For one excl. and one opt. turn lane, 55% of volume is assigned to exclusive lane.  
- Right turns on red from excl. lanes = 50% of overlapping left turn.

**Critical Volumes:**  
- N-S: 429  
- E-W: 490  
- NW: 151  
- SUM: 1070  
- No. of Phases: 5  
- Level of Service: B  

**Volume / Capacity:**  
- 0.678  

**File Name:** CMA1
### Critical Movement Analysis

**Location:** Tujunga Avenue @ Riverside Drive - Camarillo Street

**Project:** Harvard Westlake School Parking Improvement Plan Addendum/5-08-3744-2

**Buildout Year:** 2019

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#### Assumptions

- Maximum Sum of Critical Volumes (Intersection Capacity): 2 Phase=1500, 3 Phase=1425, 4+ Phase=1375, Unsignalized=1200.
- For dual turn lanes, 55% of volume is assigned to the heavier lane.
- For one excl. and one opt. turn lane, 55% of volume is assigned to the exclusive lane.
- Right turns on green from excl. lanes = 50% of volume; 40% of volume assigned to left-turn.
- Right turns on red from excl. lanes = 50% of volume; 50% of volume assigned to left-turn.
### CRITICAL MOVEMENT ANALYSIS

**Project:** Harvard Westlake School Parking Improvement Plan Addendum/5-08-3744-2  
**Buildout Year:** 2019  
**File Name:** CMA2  
**Counts by:** National Data & Surveying Services

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Assumptions:
- Maximum Sum of Critical Volumes (Intersection Capacity): 2 Phase=1500, 3 Phase=1425, 4+ Phase=1375, Unsignalized=1200.
- For dual turn lanes, 55% of volume is assigned to heavier lane.
- For one excl. and one opt. turn lane, 55% of volume is assigned to exclusive lane.
- Right turns on red excl. lanes = 50% of overlapping left turn.

10:13 AM
### Critical Movement Analysis

#### Project Details
- **Location:** Tujunga Avenue @ Riverside Drive - Camarillo Street
- **Peak Hour:** SAT
- **Date of Count:** 08/12/2016
- **Annual Growth:** 2.0%
- **Buildout Year:** 2019
- **File Name:** CMA3
- **Counts by:** National Data & Surveying Services

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#### Critical Volumes
- **N-S:** 417 - 431 - 431 - 442 - 456
- **E-W:** 519 - 525 - 525 - 550 - 557
- **NW:** 139 - 139 - 139 - 147
- **SUM:** 1074 - 1094 - 1094 - 1140 - 1160

#### Assumptions
- Maximum Sum of Critical Volumes (Intersection Capacity): 2 Phase=1500, 3 Phase=1425, 4+ Phase=1375, Unsignalized=1200.
- For dual turn lanes, 55% of volume is assigned to heavier lane.
- For one excl. and one opt. turn lane, 55% of volume is assigned to exclusive lane.
- Right turns on red from excl. lanes = 50% of overlapping left turn.