

## **Appendix R      Traffic Impact Analysis (January 2017)**

**This page intentionally left blank**

TRAFFIC IMPACT ANALYSIS

**661 BEAR VALLEY**

Escondido, California  
January 18, 2017

LLG Ref. 3-13-2299

**Linscott, Law &  
Greenspan, Engineers**

4542 Ruffner Street  
Suite 100

San Diego, CA 92111

**858.300.8800** T

858.300.8810 F

[www.llgengineers.com](http://www.llgengineers.com)

## EXECUTIVE SUMMARY

The “661 Bear Valley” Project (Project) proposes the development of 55 residential dwelling units on 40.88 acres. The project site is located east of Bear Valley Parkway, north of Encino Drive in the City of Escondido. The Project proposes to improve its frontage along Bear Valley Parkway to include a third northbound lane which will provide additional capacity to these two segments.

The project study area includes five intersections and eight roadway street segments. The traffic analyses for the project were conducted in accordance with the *City of Escondido’s Traffic Impact Study Guidelines*. The following scenarios are evaluated in this report:

- Existing
- Existing + Project
- Existing + Cumulative Projects
- Existing + Project + Cumulative Projects
- Buildout (Year 2035) without Project (Street Segments only)
- Buildout (Year 2035) with Project (Street Segments only)

The project traffic generation calculations were conducted using the trip generation rates published in the SANDAG’s “*Not so Brief Guide of Vehicular Traffic Generation Rates for San Diego Region*” (April 2002). Based on the lot size of the project, SANDAG specifies a trip rate of 10.0 trips/ unit. The project is calculated to generate 550 daily trips with 44 trips (13 inbound/31 outbound) in AM peak hour and 55 trips (39 inbound/16 outbound) during PM peak hour.

The project traffic distribution was based on a SANDAG Select Zone Assignment to determine the gross regional distribution of traffic. Additional engineering judgment was applied based on existing traffic flows, intersection controls, and roadway characteristics to refine the local distribution.

Cumulative projects were accounted for based on research conducted by LLG within the City of Escondido and County of San Diego. Under direction of City staff, cumulative project information was interpolated based on growth between Year 2035 volumes and existing traffic counts.

A Horizon Year (2035) analysis was conducted comparing street segment operations both with and without the project. The analysis showed that no changes to future roadway impacts would occur due to development of the Proposed Project.

Based on the City of Escondido and Caltrans significance criteria, ***significant impacts are identified*** at one (1) intersection locations. Proposed fair share mitigation measures are described in *Section 12.0* of this report. The Project will also contribute fair share payments to LOS F-operating locations to which it: a) adds a less-than-significant amount of traffic volumes, and b) does not otherwise contribute some form of improvement, per recommendations in the City’s published traffic guideline.

# TABLE OF CONTENTS

SECTION	PAGE
<b>1.0 Introduction.....</b>	<b>1</b>
<b>2.0 Project Description .....</b>	<b>4</b>
2.1 Project Location .....	4
2.2 Project Description.....	4
2.3 Project Access .....	4
2.4 Alternative Transportation and Non-Motorized Travel .....	4
2.5 Frontage Improvements/Safety Hazards .....	4
<b>3.0 Existing Conditions.....</b>	<b>6</b>
3.1 Existing Transportation Conditions .....	6
3.2 Existing Traffic Volumes.....	7
<b>4.0 Analysis Approach and Methodology .....</b>	<b>11</b>
<b>5.0 Significance Criteria .....</b>	<b>14</b>
5.1 City of Escondido .....	14
<b>6.0 Analysis of Existing Conditions.....</b>	<b>15</b>
6.1 Peak Hour Intersection Levels of Service.....	15
6.2 Daily Street Segment Levels of Service .....	16
<b>7.0 Trip Generation/Distribution/Assignment .....</b>	<b>17</b>
7.1 Trip Generation.....	17
7.2 Trip Distribution/Assignment .....	17
<b>8.0 Cumulative Growth Traffic Volumes .....</b>	<b>22</b>
<b>9.0 Analysis of Near-Term Scenarios.....</b>	<b>26</b>
9.1 Existing + Project.....	26
9.1.1 Intersection Analysis.....	26
9.1.2 Segment Operations .....	26
9.2 Existing + Cumulative Growth .....	26
9.2.1 Intersection Analysis.....	26
9.2.2 Segment Operations .....	26
9.3 Existing + Project + Cumulative Growth .....	27
9.3.1 Intersection Analysis.....	27
9.3.2 Segment Operations .....	27
<b>10.0 Analysis of Buildout Scenario.....</b>	<b>30</b>

10.1 Buildout.....	30
10.2 Buildout + Project.....	30
<b>11.0 Project Access.....</b>	<b>34</b>
<b>12.0 Significance of Impacts and Mitigation Measures.....</b>	<b>35</b>
12.1 Significant Impacts Prior to Mitigation .....	35
12.1.1 Intersections .....	35
12.2 Mitigation Measures .....	35
12.2.1 Intersections .....	35
<b>13.0 Project Fair Share Contributions.....</b>	<b>38</b>

## APPENDICES

---

### APPENDIX

---

- A. Intersection and Segment Manual Count Sheets
- B. Intersection Methodology and Near-Term Analysis Sheets
- C. Post-Mitigation Analysis Sheets

## LIST OF FIGURES

SECTION—FIGURE #	FOLLOWING PAGE
Figure 1–1 Vicinity Map .....	2
Figure 1–2 Project Area Map .....	3
Figure 2–1 Site Plan .....	5
Figure 3–1 Existing Conditions Diagram.....	9
Figure 3–2 Existing Traffic Volumes.....	10
Figure 7–1 Project Traffic Distribution.....	19
Figure 7–2 Project Traffic Volumes.....	20
Figure 7–3 Existing + Project Traffic Volumes .....	21
Figure 8–1 Cumulative Projects Traffic Volumes .....	23
Figure 8–2 Existing + Cumulative Projects Traffic Volumes.....	24
Figure 8–3 Existing + Project + Cumulative Projects Traffic Volumes .....	25
Figure 10–1 Year 2035 Traffic Volumes.....	32
Figure 10–2 Year 2035 + Project Traffic Volumes .....	33
Figure 12–1 Project Contributions Diagram.....	37

## LIST OF TABLES

SECTION—TABLE #	PAGE
Table 3–1 Existing Traffic Volumes.....	8
Table 4–1 Traffic Impact Analysis ADT Thresholds for Roadway Segments.....	12
Table 4–2 Traffic Impact Analysis ADT Thresholds for Intersections .....	12
Table 4–3 City of Escondido Street Segment Average Daily Vehicle Trip Thresholds .....	13
Table 5–1 City of Escondido Traffic Impact Significance Thresholds .....	14
Table 6–1 Existing Intersection Operations.....	15
Table 6–2 Existing Street Segment Operations .....	16
Table 7–1 Project Trip Generation .....	17
Table 9–1 Near-Term Intersection Operations .....	28
Table 9–2 Near-Term Street Segment Operations.....	29
Table 10–1 Long-Term Street Segment Operations .....	31
Table 11–1 Project Driveway Operations.....	34
Table 12–1 Post-Mitigation Intersection Operations.....	36

Table 13–1 Fair Share Summary Significant and Cumulative LOS E/F Locations ..... 38  
Table 13–2 Fair Share Summary Non-Significant LOS F Locations ..... 39

## TRAFFIC IMPACT ANALYSIS

# 661 BEAR VALLEY

Escondido, California

January 18, 2017

## 1.0 INTRODUCTION

Linscott, Law and Greenspan, Engineers (LLG) have prepared the following traffic impact analysis to assess the impacts to the street system as a result of the 661 Bear Valley residential project (Project), which proposes the development of 55 single-family dwelling units. The Project site is located east of Bear Valley Parkway across from Encino Drive in the City of Escondido.

*Figure 1-1* shows the Project vicinity and *Figure 1-2* illustrates, in more detail, the site location.

The traffic analysis presented in this report includes the following:

- Project Description
- Existing Conditions
- Analysis Approach and Methodology
- Significance Criteria
- Analysis of Existing Conditions
- Project Trip Generation/Distribution/Assignment
- Cumulative Projects
- Analysis of Near-term Scenarios
- Analysis of Buildout Scenarios
- Site Access Discussion
- Significance of Impacts and Mitigation Measures
- Project Fair Share Contributions

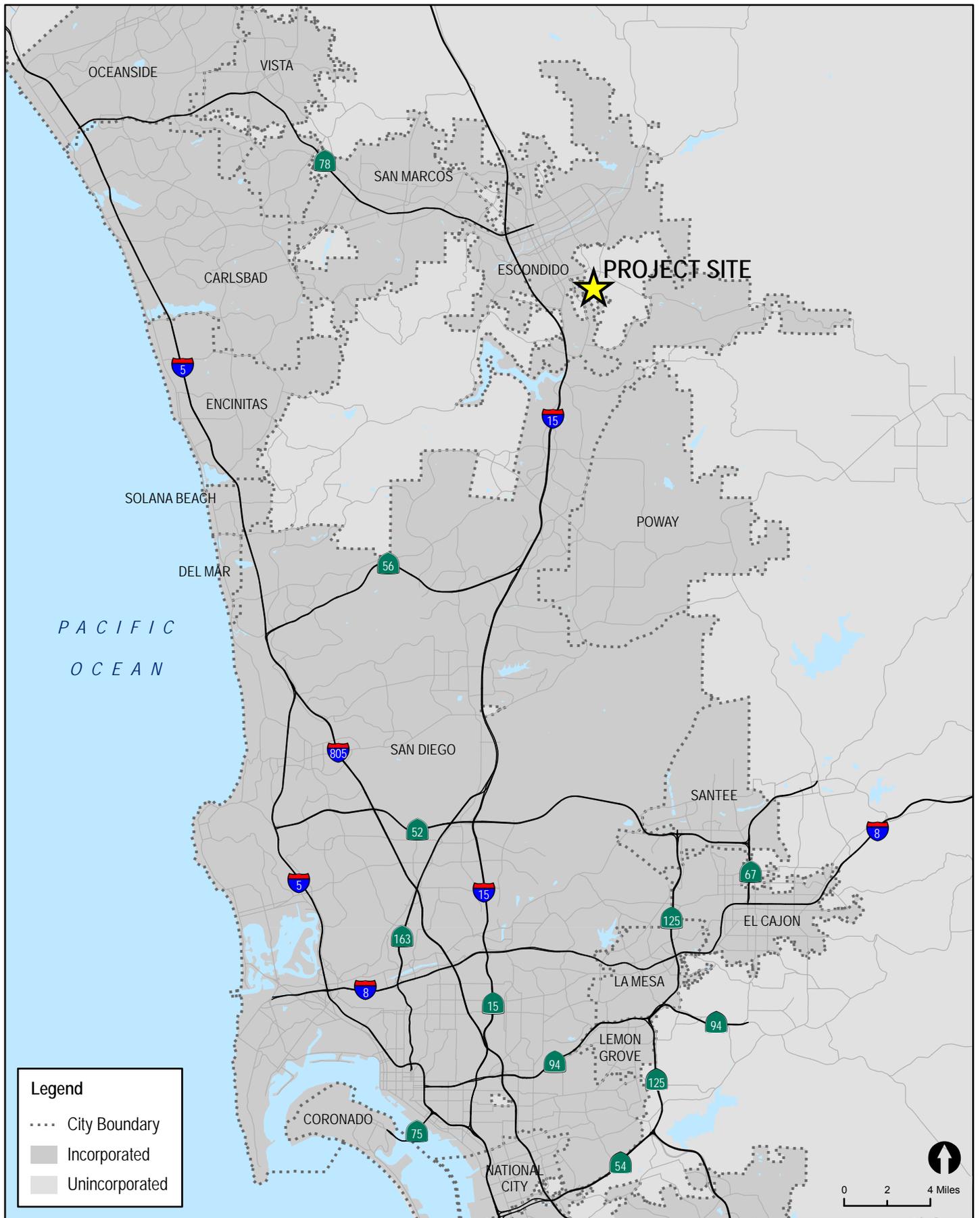
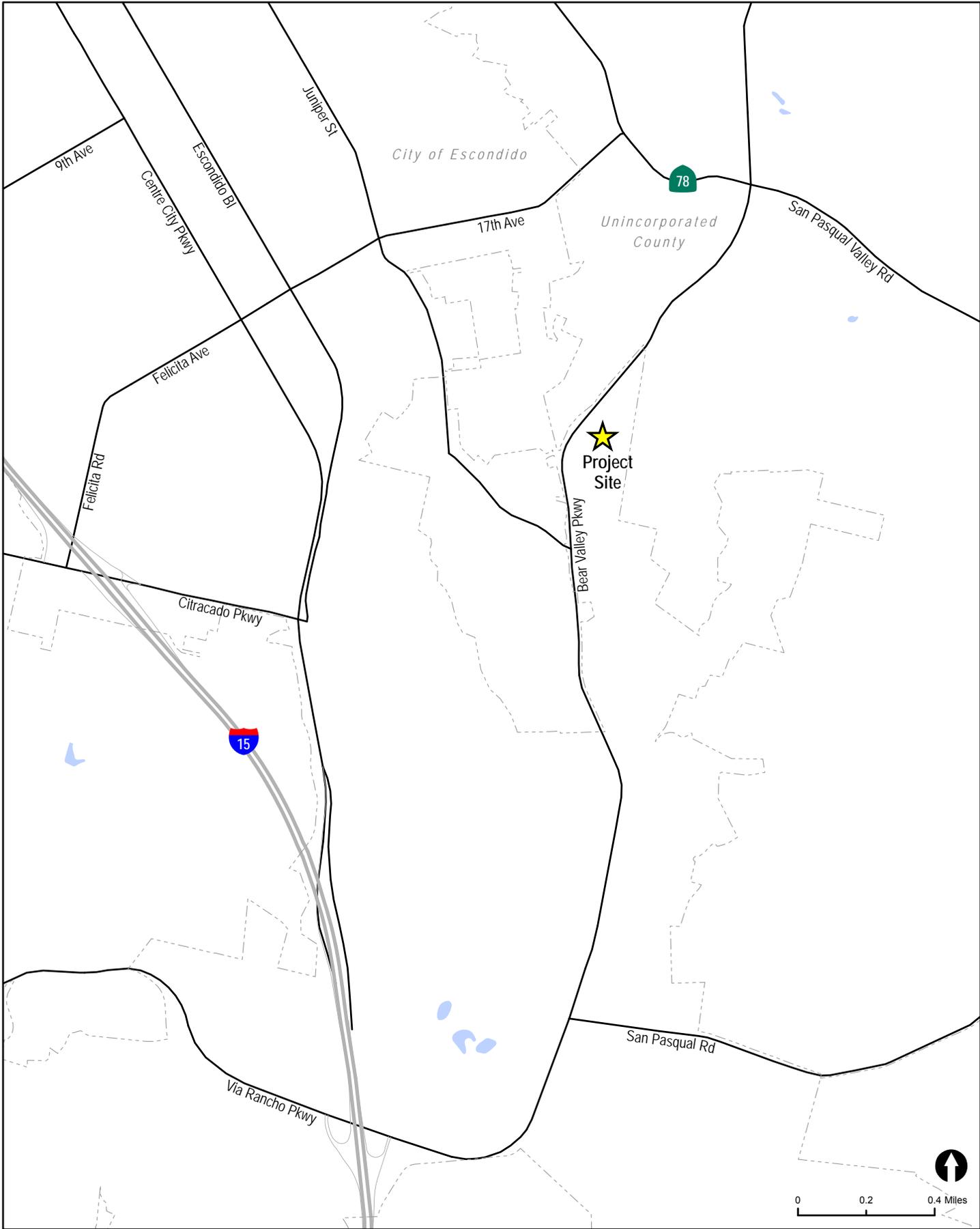


Figure 1-1

Vicinity Map

661 BEAR VALLEY



## 2.0 PROJECT DESCRIPTION

### 2.1 Project Location

The Project is located east of Bear Valley Road, across from Encino Drive in the City of Escondido.

### 2.2 Project Description

The proposed Project would construct 55 new single-family detached residences on a 40.88 acre parcel. The residential lots would have an average lot size of approximately 10,000 square feet, with approximately 20.7 acres of the parcel devoted to open space and recreation. The site is designated for Estate II residential land uses in the City of Escondido General Plan (2012), which allows for up to two dwelling units per acre (du/ac). The gross density of the Project site would be 1.35 du/ac.

### 2.3 Project Access

Access to the site would be provided from a signalized, full-access driveway located across from the existing Zlatibor Ranch Road at the northern portion of the Project. A secondary, emergency-only access would be provided at the south end of the site. All access/emergency access is designed to meet City of Escondido Fire Department's specifications.

### 2.4 Alternative Transportation and Non-Motorized Travel

There is currently a Class II bicycle lane on Bear Valley Parkway from its southern end to San Pasqual Valley Road to serve alternative transportation and non-motorized travel. Development of the Project will result in frontage improvements from the site's southern boundary to just south of Choya Canyon Road. These improvements will maintain the northbound bike lane, and add dedications and sidewalks along the frontage to benefit pedestrians.

### 2.5 Frontage Improvements/Safety Hazards

In addition to the signalized access at the main driveway, the Project will also dedicate additional right-of-way to accommodate full half-width improvements along the site's frontage on Bear Valley Parkway. The improvements will provide a third northbound lane along the Project extents. The current capacity of Bear Valley Parkway is 15,000 average daily trips (ADT). The additional 3<sup>rd</sup> lane would offer as much as 7,500 ADT more capacity to the roadway, although for the purposes of the analysis a modest increase in capacity of 500 ADT was assumed. This would fully offset the Project ADT on Bear Valley Parkway shown on *Figure 7-2*.

Implementation of frontage improvements by the Project will be developed to the satisfaction of the City of Escondido's traffic engineer, and will adhere to published standards where practical. As such, these frontage improvements are not expected to result in increased safety hazards.

*Figure 2-1* shows the Project's Site Plan.



### 3.0 EXISTING CONDITIONS

Effective evaluation of the traffic impacts associated with the proposed Project requires an understanding of the existing transportation system within the Project study area. **Figure 3-1** shows an existing conditions diagram, including signalized/unsignalized intersections and lane configurations.

The study area was determined in accordance with the City of Escondido's published *Traffic Impact Analysis Requirement Guidelines (2014)*. Further details on the City's guidelines for developing the study area can be found in *Section 4.0*. The study area includes the following five (5) existing public intersections and eight (8) street segments.

#### Intersections:

1. Bear Valley Parkway / San Pasqual Valley Road (SR 78)
2. Bear Valley Parkway / Zlatibor Ranch Road (future Project Driveway)
3. Bear Valley Parkway / Encino Drive
4. Bear Valley Parkway / Sunset Drive
5. Bear Valley Parkway / Las Palmas Avenue

#### Segments:

1. Bear Valley Parkway: Eldorado Drive to Zlatibor Ranch Rd
2. Bear Valley Parkway: Zlatibor Ranch Rd to Encino Drive
3. Bear Valley Parkway: Encino Drive to Sunset Drive
4. Bear Valley Parkway: Sunset Drive to Las Palmas Avenue
5. Bear Valley Parkway: Las Palmas Avenue to Mary Lane
6. Bear Valley Parkway: Mary Lane to San Pasqual Road
7. Encino Drive: West of Bear Valley Parkway
8. Sunset Drive: West of Bear Valley Parkway

### 3.1 Existing Transportation Conditions

The following is a brief description of the streets in the Project area. All study area roadways are located within the City of Escondido General Plan area and thus roadway classifications are taken from the City of Escondido's *General Plan Mobility Element (2011)*.

**Bear Valley Parkway** is a north/south facility with varying Mobility Element classifications. In the Project study area, from north of San Pasqual Valley Road to Las Palmas Avenue, it is currently constructed as a two-lane undivided roadway and classified as Major Road. From Las Palmas Avenue to Beethoven Drive, it is constructed as a four-lane divided roadway and classified as a Super Major Road.

The posted speed limit is 50 mph on all segments of Bear Valley Parkway described, with the exception of a 25 mph school zone in the vicinity of Las Palmas Avenue. Curbside parking is prohibited. Bear Valley Parkway provides Class II bicycle lanes from its southern end to San Pasqual Valley Road.

It should be noted that there is a Specific Alignment Plan for the two-lane portion of Bear Valley Parkway along the Project's frontage, through Bear Valley Parkway's intersection with Encino Drive (Hunsaker & Associates, 2016). This plan will allow Bear Valley Parkway to be improved to four-lanes, but with requisite design exceptions needed to preserve sensitive riparian habitat located between the site and the roadways. The frontage improvements proposed for the Project will be consistent with, and a subset of, the overall improvements shown on the Specific Alignment Plan. These frontage improvements will generally consist of dedication and widening of Bear Valley parkway to half-width improvements for the extents of the Project frontage. This will include transitions to and from an additional third, northbound lane. A northbound bike lane will also be provided, as will a dedicated northbound right-turn turn-lane and taper from Bear Valley Parkway to the Project's main access at Zlatibor Ranch Road. The ultimate improvements (to be constructed by others) related to the Specific Alignment Plan will generally include the provision of a second southbound travel lane, realignment and improvement of the Bear Valley Parkway/Encino Drive intersection, ultimately providing four lanes from Choya Canyon Road south to match the existing four-lane section of Bear Valley Parkway north of Sunset Drive.

**San Pasqual Valley Road (SR 78)** is classified as a Major Road. It is constructed as a two-lane undivided roadway with a posted speed limit of 45 mph. No bicycle facilities are provided, though Class II bicycle lanes are proposed per the City's *Mobility Element*. SR 78 intersects Bear Valley Parkway at a signalized intersection.

**Encino Drive** is classified as a Local Collector. It is currently constructed as a two-lane undivided roadway with a two-way left-turn lane on a short segment immediately adjacent to the southern end of the roadway. The posted speed limit is 35 mph and curbside parking is not allowed. No bicycle facilities currently exist, though Class II bicycle lanes are proposed per the City's *Mobility Element*. Encino Drive intersects Bear Valley Parkway with an unorthodox unsignalized intersection configuration.

**Sunset Drive** is classified as a Local Collector. It is currently constructed as a two-lane undivided roadway with a posted speed limit of 40 mph. Curbside parking is prohibited. Sunset Drive intersects Bear Valley Parkway at a signalized intersection.

**Las Palmas Avenue** is an unclassified residential road. It is currently constructed as a two-lane undivided road, with a two-way left-turn lane in the immediate vicinity of Bear Valley Middle School, just west of Bear Valley Parkway. The posted speed limit is 25 mph and curbside parking is prohibited. Las Palmas Avenue is signalized at its intersection with Bear Valley Parkway. In addition to the Bear Valley Middle School, LR Green Elementary School and the Classical Academy are also located in the vicinity of this intersection.

### 3.2 Existing Traffic Volumes

**Table 3-1** is a summary of the most recent available average daily traffic volumes (ADTs) from LLG counts commissioned in February 2014. Manual hand counts at the study area intersections were also conducted in February 2014 when schools were in session.

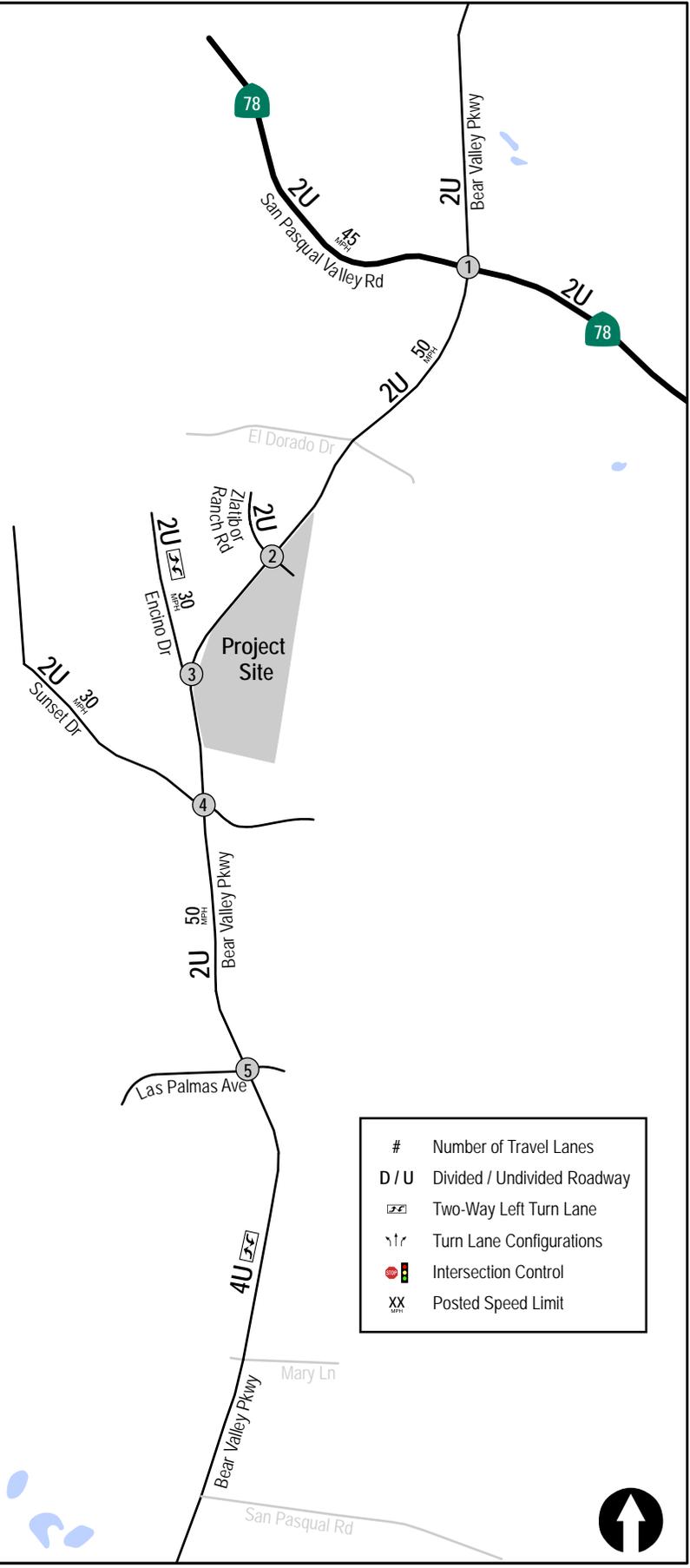
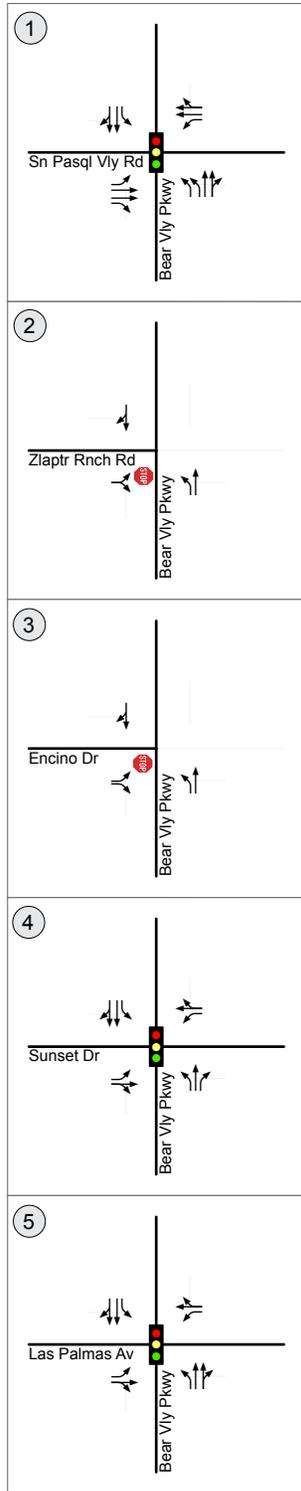
Figure 3–2 shows the Existing Traffic Volumes. Appendix A contains the manual count sheets.

TABLE 3–1  
EXISTING TRAFFIC VOLUMES

Street Segment	ADT <sup>a</sup>
<b>Bear Valley Parkway</b>	
Eldorado Drive to Zlatibor Ranch Road	20,600
Zlatibor Ranch Road to Encino Drive	20,110
Encino Drive to Sunset Drive	21,770
Sunset Drive to Las Palmas Avenue	30,600
Las Palmas Avenue to Mary Lane	27,300
Mary Lane to San Pasqual Road	29,430
<b>Encino Drive</b>	
West of Bear Valley Parkway	1,420
<b>Sunset Drive</b>	
West of Bear Valley Parkway	7,450

**Footnotes:**

- a. Average Daily Traffic Volume counts conducted in February 2014 by LLG Engineers.



#	Number of Travel Lanes
D / U	Divided / Undivided Roadway
	Two-Way Left Turn Lane
	Turn Lane Configurations
	Intersection Control
XX	Posted Speed Limit



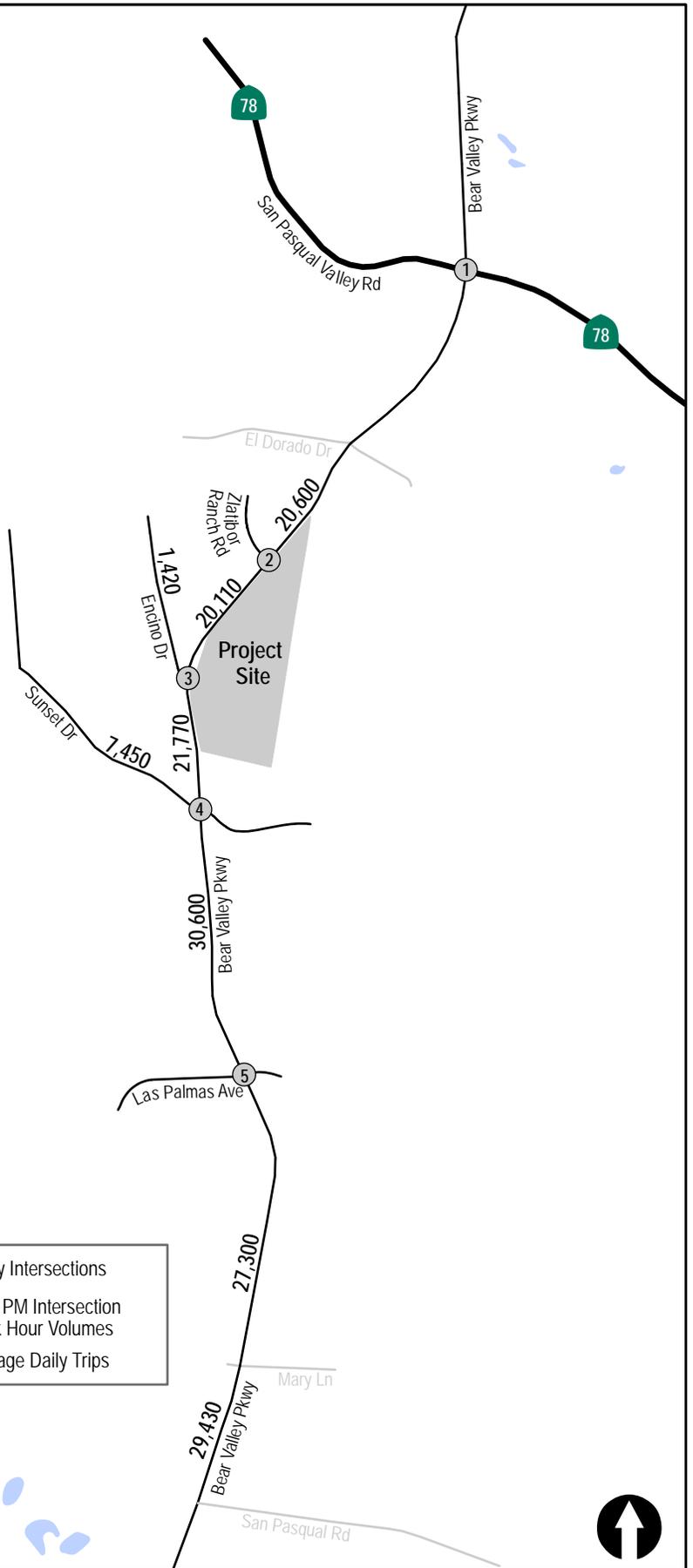
①	<p>18 / 29 659 / 418 84 / 63</p> <p>82 / 65 508 / 448 154 / 111</p> <p>Sn Pasq'l Vly Rd</p> <p>18 / 26 358 / 498 126 / 106</p> <p>Bear Vly Pkwy</p> <p>104 / 105 323 / 798 99 / 211</p>
②	<p>0 / 1 895 / 626</p> <p>Zlatbr Rnch Rd</p> <p>2 / 1 9 / 3</p> <p>Bear Vly Pkwy</p> <p>3 / 6 493 / 1,106</p>
③	<p>12 / 5 892 / 624</p> <p>Encino Dr</p> <p>2 / 4 101 / 35</p> <p>Bear Vly Pkwy</p> <p>90 / 69 494 / 1,108</p>
④	<p>7 / 11 1,023 / 654 3 / 4</p> <p>Sunset Dr</p> <p>12 / 12 4 / 25 674 / 280</p> <p>Bear Vly Pkwy</p> <p>398 / 195 575 / 1,150 4 / 4</p>
⑤	<p>341 / 47 1,373 / 856 5 / 4</p> <p>Las Palmas Av</p> <p>219 / 49 17 / 3 139 / 23</p> <p>Bear Vly Pkwy</p> <p>140 / 21 795 / 1,299 16 / 26</p>

① Study Intersections

AM / PM AM / PM Intersection

Peak Hour Volumes

XX,XXX Average Daily Trips



## 4.0 ANALYSIS APPROACH AND METHODOLOGY

Level of service (LOS) is the term used to denote the different operating conditions which occur on a given roadway segment under various traffic volume loads. It is a qualitative measure used to describe a quantitative analysis taking into account factors such as roadway geometries, signal phasing, speed, travel delay, freedom to maneuver, and safety. Level of service provides an index to the operational qualities of a roadway segment or an intersection. Level of service designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions. Level of service designation is reported differently for signalized intersections, unsignalized intersections and roadway segments.

The City of Escondido's recently published Traffic Impact Analysis Guidelines provide the following direction on report approach and methodology:

1. The traffic study should include a SANDAG prepared Select Zone Assignment for the project to determine the project traffic distribution.
2. The traffic study should utilize the Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region (April 2002) published by SANDAG, to determine the project traffic volume.
3. Traffic should utilize the following scenarios to determine project traffic impacts at intersections and along roadway segments.
  - a. Existing Condition (based on new traffic counts)
  - b. Existing + Project Traffic Condition
  - c. Existing + Cumulative Projects Traffic Condition
  - d. Existing + Cumulative Projects + Project Traffic Condition
  - e. Year 2035 Traffic Condition
4. Highway Capacity Manual (Year 2010) should be utilized to determine level of service for intersections.
5. The study area should include at least all site access points and major intersections (signalized and unsignalized) adjacent to the site. The tables below contain the trigger-points to identify if a roadway segment or intersection should be included in the Traffic Impact Analysis.

**Table 4-1** below contains the trigger-points for roadway segments within the City of Escondido for different street classifications based on ADT added to the segment. **Table 4-2** below contains the trigger-points for intersections based on peak hour volumes.

TABLE 4-1  
TRAFFIC IMPACT ANALYSIS ADT THRESHOLDS FOR ROADWAY SEGMENTS

Street Classification	Lanes	Cross Sections (ft.)	TIA Trigger-Points (ADT generation)
Prime Arterial	(8 lanes)	116/136 (NP)	900
	(6 lanes)	106/126 (NP)	800
Major Road	(6 lanes)	90/110 (NP)	700
	(4 lanes)	82/102 (NP)	500
Collector	(4 lanes)	64/84 (NP)	500
	(4 lanes)	(WP)	250
Local Collector and all other	(2 lanes)	42/66 (NP)	200
		(WP)	

TABLE 4-2  
TRAFFIC IMPACT ANALYSIS ADT THRESHOLDS FOR INTERSECTIONS

Intersection Classification (Minor leg of the intersection)	TIA Trigger-Points (AM or PM peak hour trips added to any leg)
Prime Arterial	50
Major Road	40
Collector	30
Local Collector	20

**Signalized intersections** were analyzed under AM and PM peak hour conditions. Average vehicle delay was determined utilizing the methodology found in Chapter 18 of the *2010 Highway Capacity Manual (HCM)*, with the assistance of the *Synchro* (version 8) computer software. The delay values (represented in seconds) were qualified with a corresponding intersection Level of Service (LOS). Signalized intersection calculation worksheets and a more detailed explanation of the methodology are attached in **Appendix B**.

**Unsignalized intersections** were analyzed under AM and PM peak hour conditions. Average vehicle delay and Levels of Service (LOS) was determined based upon the procedures found in Chapters 19 and 20 of the *2010 Highway Capacity Manual (HCM)*, with the assistance of the *Synchro* (version 8) computer software. Unsignalized intersection calculation worksheets and a more detailed explanation of the methodology are attached in **Appendix B**.

**Street segment** analysis is based upon the comparison of daily traffic volumes (ADTs) to the City of Escondido *Street Segment Average Daily Vehicle Trip Thresholds* table. This table provides segment capacities for different street classifications, based on traffic volumes and roadway characteristics. The City of Escondido *Roadway Classification, Level of Service, and ADT Table* is included as **Table 4-3** below.

**TABLE 4-3  
CITY OF ESCONDIDO  
STREET SEGMENT AVERAGE DAILY VEHICLE TRIP THRESHOLDS**

Street Classification	Lanes	Cross Sections	Level of Service				
			A	B	C	D	E
Prime Arterial	(8 lanes)	116/136(NP)	23,800	37,800	51,800	62,300	70,000
Prime Arterial	(6 lanes)	106/126 (NP)	20,400	32,400	44,400	53,400	60,000
Major Road	(6 lanes)	90/110 (NP)	17,000	27,000	37,000	44,500	50,000
Major Road	(4 lanes)	82/102 (NP)	12,600	20,000	27,400	32,900	37,000
Collector	(4 lanes)	64/84 (NP)	11,600	18,500	25,300	30,400	34,200
Collector	(4 lanes)	(WP)	6,800	10,800	14,800	17,800	20,000
Local Collector	(2 lanes)	42/66 (NP)	5,100	8,100	11,100	13,400	15,000
Local Collector	(2 lanes)	(WP)	3,400	5,400	7,400	8,900	10,000

*Source: Escondido Traffic Impact Analysis Guidelines, 2013.*

**General Notes:**

1. (NP) = No Parking
2. (WP) = With Parking

LOS	V/C Ratio
A	0.00 ≥ 0.34
B	0.35 ≥ 0.54
C	0.55 ≥ 0.74
D	0.75 ≥ 0.80
E	0.90 ≥ 1.00
F	>1.00

The Project proposes half-width frontage improvements along Bear Valley Parkway, which will provide an additional northbound lane for approximately 2,600 feet. This length allows for transitions into and out of this lane, which effectively adds capacity to portions of two street segments under study on Bear Valley Parkway: Zlatibor Ranch Road to Encino Drive, and Encino Drive to Sunset Drive. The capacity for these roadways is 15,000 ADT (Local Collector Standard) as shown above. A full, third northbound lane could be considered to offer half again as much capacity (+7,500 ADT), however as only a portion of either segment is being improved in the northbound direction, a conservative increase in capacity of 500 ADT is applied to the Bear Valley Parkway Local Collector capacity to represent the Project improvements in the analysis. Thus, for all “With Project” calculations, the capacity used in the calculations is 15,500 ADT.

## 5.0 SIGNIFICANCE CRITERIA

The project study area includes locations that lie within the City of Escondido and to a lesser extent the County of San Diego. The City of Escondido’s significance criteria is more restrictive than the County of San Diego’s, in that secondary thresholds are applied to LOS D operating roadways, not LOS E/F operating roadways. Also, the City’s 2.0 second delay threshold for unsignalized intersections is also more conservative than the County’s use of “minimum peak hour trips”. The following is a summary of the City’s published significance criteria.

### 5.1 City of Escondido

Per the City of Escondido’s *Traffic Impact Analysis Guidelines*, based on SANTEC/ITE’s *Guidelines for Traffic Impact Studies in the San Diego Region*, the following thresholds shall be used to identify if a project is of significant traffic impact under any scenario. If now or in the future, the project’s traffic impact causes the values in **Table 5-1** below to be exceeded in a roadway segment or an intersection that is operating at LOS D or worse, it is determined to be a significant impact and the project shall identify mitigation measures.

TABLE 5-1  
CITY OF ESCONDIDO TRAFFIC IMPACT SIGNIFICANCE THRESHOLDS

Level of Service With Project	Allowable Change due to Project Impact		
	Roadway Segments		Intersections
	V/C	Speed Reduction (mph)	Delay (sec.)
D, E, or F	<b>0.02</b>	<b>1</b>	<b>2</b>

## 6.0 ANALYSIS OF EXISTING CONDITIONS

### 6.1 Peak Hour Intersection Levels of Service

**Table 6-1** summarizes the existing peak hour intersection operations. As shown, all the study area intersections are calculated to currently operate at service levels of LOS D or better during both the AM and PM peak hours, with the exception of Bear Valley Parkway / Sunset Drive, which currently operates at LOS F during the AM peak hour.

**TABLE 6-1  
EXISTING INTERSECTION OPERATIONS**

Intersection	Control Type	Peak Hour	Existing	
			Delay <sup>a</sup>	LOS <sup>b</sup>
1. Bear Valley Parkway / San Pasqual Valley Road (SR 78) <sup>c</sup>	Signal	AM	38.8	D
		PM	43.1	D
2. Bear Valley Pkwy / Zlatibor Ranch Rd (future Project Driveway)	OWSC <sup>d</sup>	AM	17.7	C
		PM	15.8	C
3. Bear Valley Parkway / Encino Drive	OWSC <sup>d</sup>	AM	30.5	D
		PM	20.4	C
4. Bear Valley Parkway / Sunset Drive	Signal	AM	121.6	F
		PM	41.6	D
5. Bear Valley Parkway / Las Palmas Avenue	Signal	AM	44.5	D
		PM	6.7	A

**Footnotes:**

- a. Average delay expressed in seconds per vehicle.
- b. Level of Service.
- c. Caltrans-controlled intersection location.
- d. One-Way Stop Controlled intersection, Minor street left-turn delay is reported.

SIGNALIZED		UNSIGNALIZED	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

## 6.2 Daily Street Segment Levels of Service

**Table 6-2** summarizes the existing segment operations along the key study area roadways. As shown, Bear Valley Parkway from Eldorado Drive to Las Palmas Avenue is calculated to currently operate at LOS F. All other roadway segments currently operate at LOS D or better.

**TABLE 6-2  
EXISTING STREET SEGMENT OPERATIONS**

Street Segment	Existing Classification	Capacity (LOS E) <sup>a</sup>	ADT <sup>b</sup>	LOS <sup>c</sup>	V/C <sup>d</sup>
<b>Bear Valley Parkway</b>					
Eldorado Drive to Zlatibor Ranch Road	2-Lane Collector	15,000	20,600	F	1.373
Zlatibor Ranch Road to Encino Drive	2-Lane Collector	15,000	20,110	F	1.341
Encino Drive to Sunset Drive	2-Lane Collector	15,000	21,770	F	1.451
Sunset Drive to Las Palmas Avenue	2-Lane Collector	15,000	30,600	F	2.040
Las Palmas Avenue to Mary Lane	4-Lane Major	37,000	27,300	C	0.738
Mary Lane to San Pasqual Road	4-Lane Major	37,000	29,430	D	0.795
<b>Encino Drive</b>					
West of Bear Valley Parkway	2-Lane Collector	15,000	1,420	A	0.095
<b>Sunset Drive</b>					
West of Bear Valley Parkway	2-Lane Collector	15,000	7,450	B	0.497

**Footnotes:**

- a. Capacities based on City of Escondido Roadway Classification Table.
- b. Average Daily Traffic Volumes
- c. Level of Service
- d. Volume to Capacity

## 7.0 TRIP GENERATION/DISTRIBUTION/ASSIGNMENT

### 7.1 Trip Generation

The Project proposes to develop 55 single-family homes on an 40.88-acre property.

The Project traffic generation calculations were conducted using the trip generation rates published in the SANDAG's "Not so Brief Guide of Vehicular Traffic Generation Rates for San Diego Region" (April 2002). Based on the type and density of homes proposed by the Project, SANDAG specifies a trip rate of 10/ unit.

**Table 7-1** shows a summary of the Project traffic generation. As tabulated the proposed Project is calculated to generate 550 daily trips with 44 trips (13 inbound/31 outbound) in AM peak hour and 55 trips (39 inbound/16 outbound) during PM peak hour.

TABLE 7-1  
PROJECT TRIP GENERATION

Land Use	Size	Daily Trip Ends (ADTs)		AM Peak Hour				PM Peak Hour					
		Rate <sup>a</sup>	Volume	% of ADT	In:Out		Volume		% of ADT	In:Out		Volume	
					Split	In	Out	In		Out	Split	In	Out
Residential – Single Family Detached	55 DU	10/DU	550	8%	30:70	13	31	10%	70:30	39	16		

**Footnotes:**

a. Rate is based on SANDAG's (Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region, April 2002.

Air Quality (AQ) and Greenhouse Gas (GHG) analyses were completed on the trip generation of 550 ADT described above. These studies evaluated the Project's land use, trip generation and location in the City/County, and utilized an average trip length of 20 miles and an average running speed of 45 MPH based on these variables.

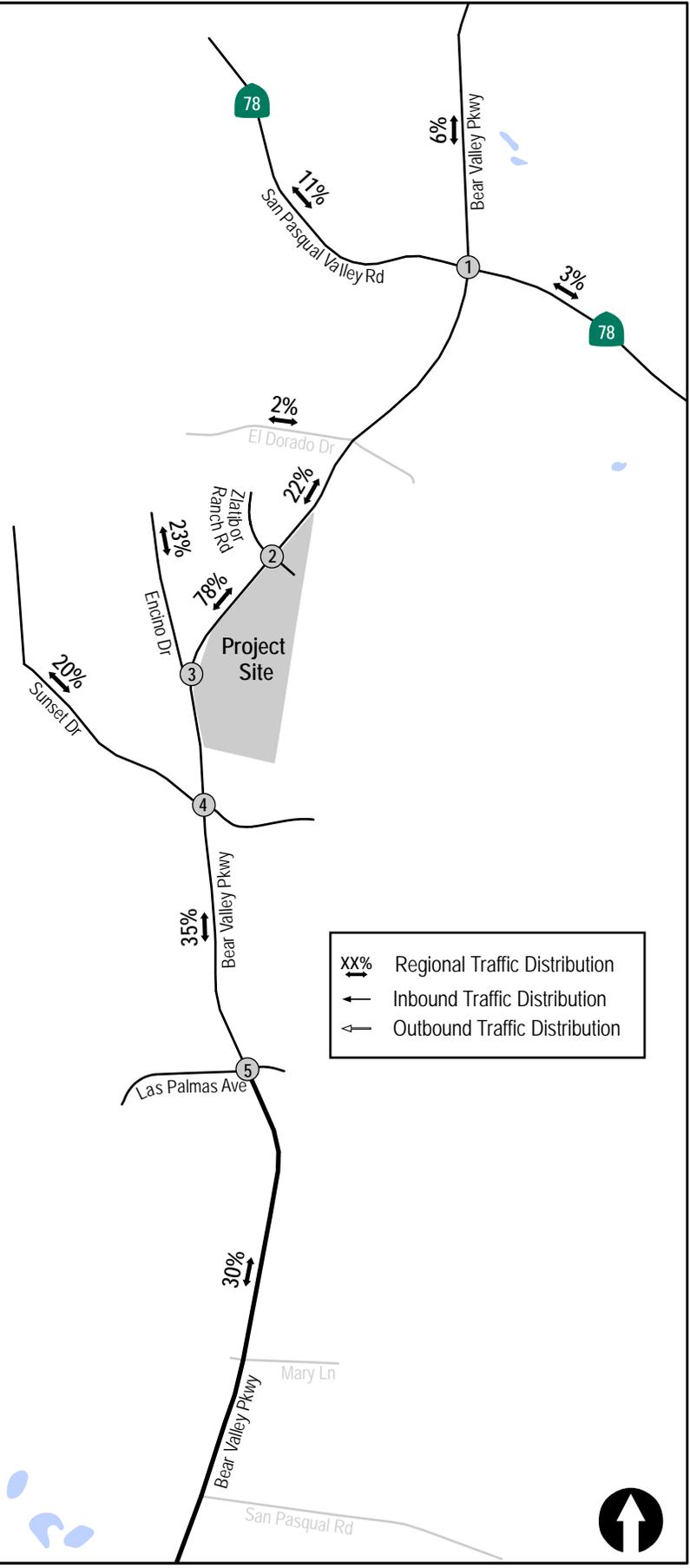
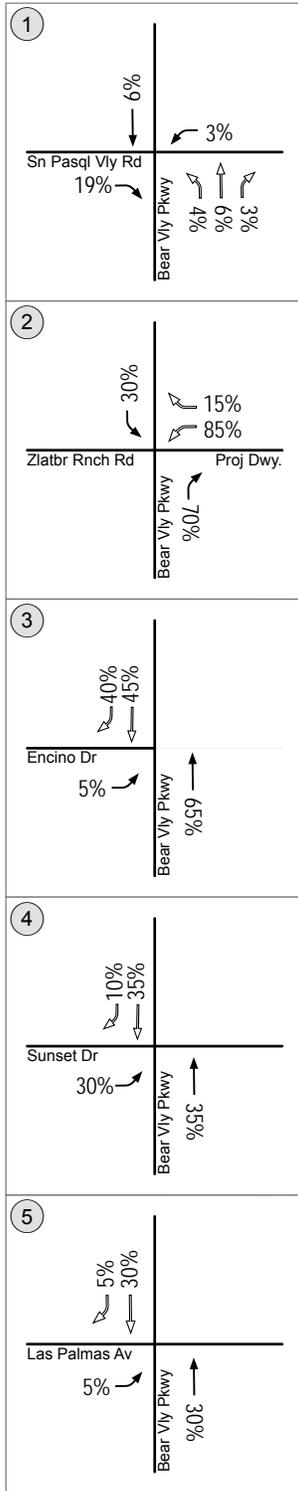
### 7.2 Trip Distribution/Assignment

A Select Zone Assignment (SZA) was conducted to determine the area's regional distribution. LLG utilized the SANDAG traffic model, including the subarea model for the City of Escondido including the land uses associated with General Plan Update. This is the City's preferred model as it includes the most up-to-date buildout land uses. The Project traffic was distributed and assigned to the local street system based on the SZA results, which is affected by the Project's proximity to Interstate 15 and State Route 78, and the location of area schools, and office/commercial/retail development, particularly in downtown Escondido.

While the model was used to determine gross regional distribution, LLG applied engineering judgment based on existing traffic flows, intersection controls and roadway characteristics to inform the local distribution among the nearby intersections. In some instances, reciprocal movements (e.g. a northbound to westbound left-turn and its reciprocal eastbound to southbound right-turn) occur at two different intersections based on what type of control (signal or stop sign) the intersections provide.

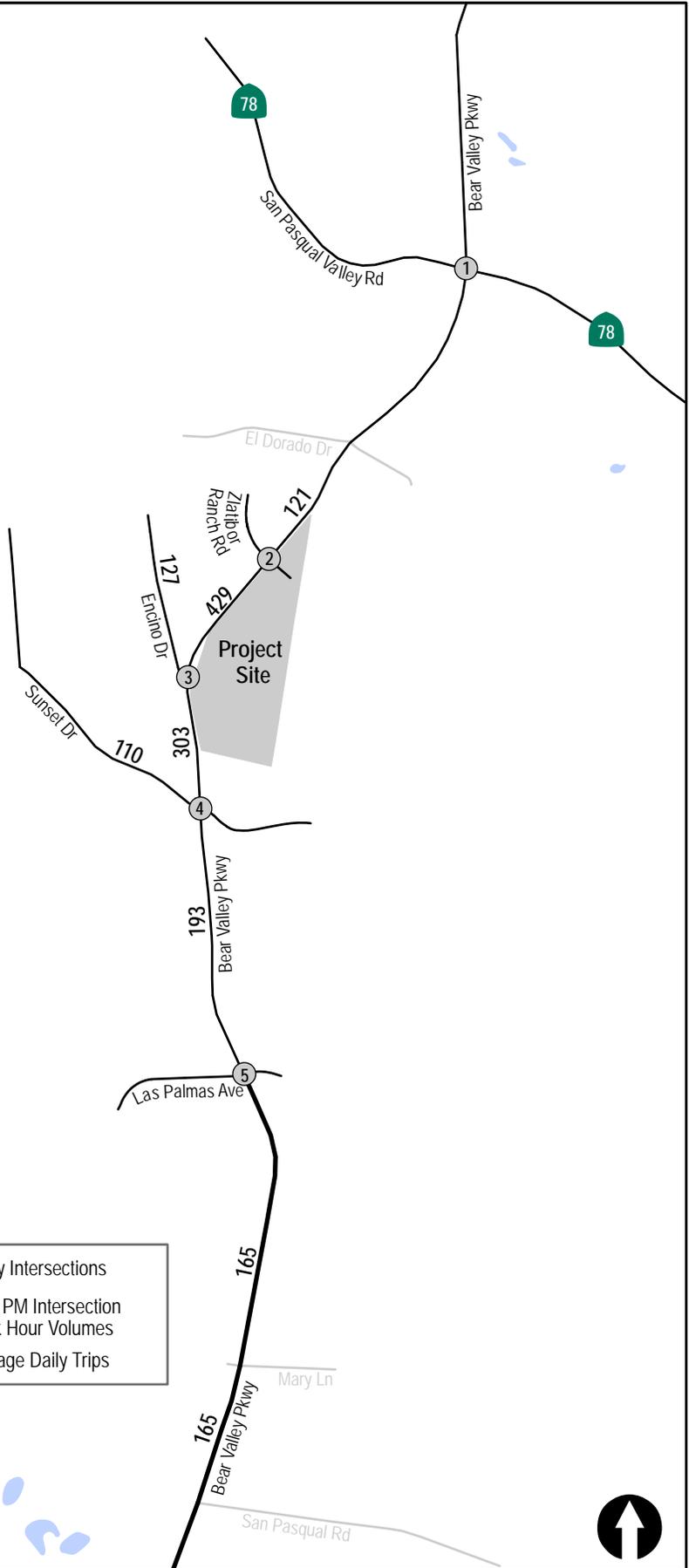
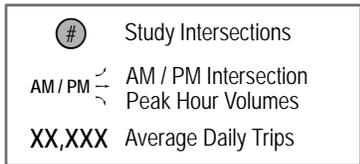
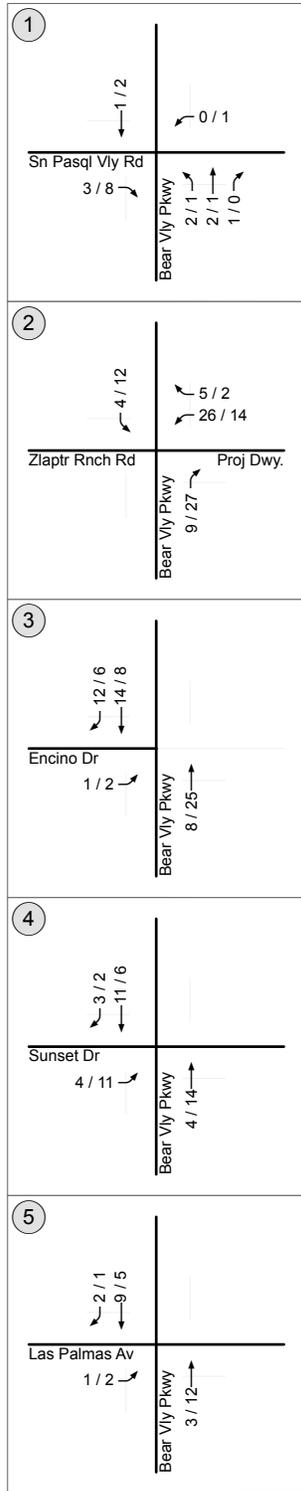
**Figure 7-1** shows the Project trip distribution percentages. **Figure 7-2** shows the AM/PM peak hour Project traffic volumes. **Figure 7-3** shows Existing + Project traffic volumes.

As seen in *Figure 7-1*, 2% of inbound and outbound Project traffic is expected to use Eldorado Drive. To be conservative in the intersection analysis, this traffic was assigned to use the Bear Valley Parkway / San Pasqual Valley Road (SR 78) intersection. This is reflected in the volumes shown in *Figure 7-2* and *Figure 7-3*.



XX% Regional Traffic Distribution  
 ← Inbound Traffic Distribution  
 → Outbound Traffic Distribution



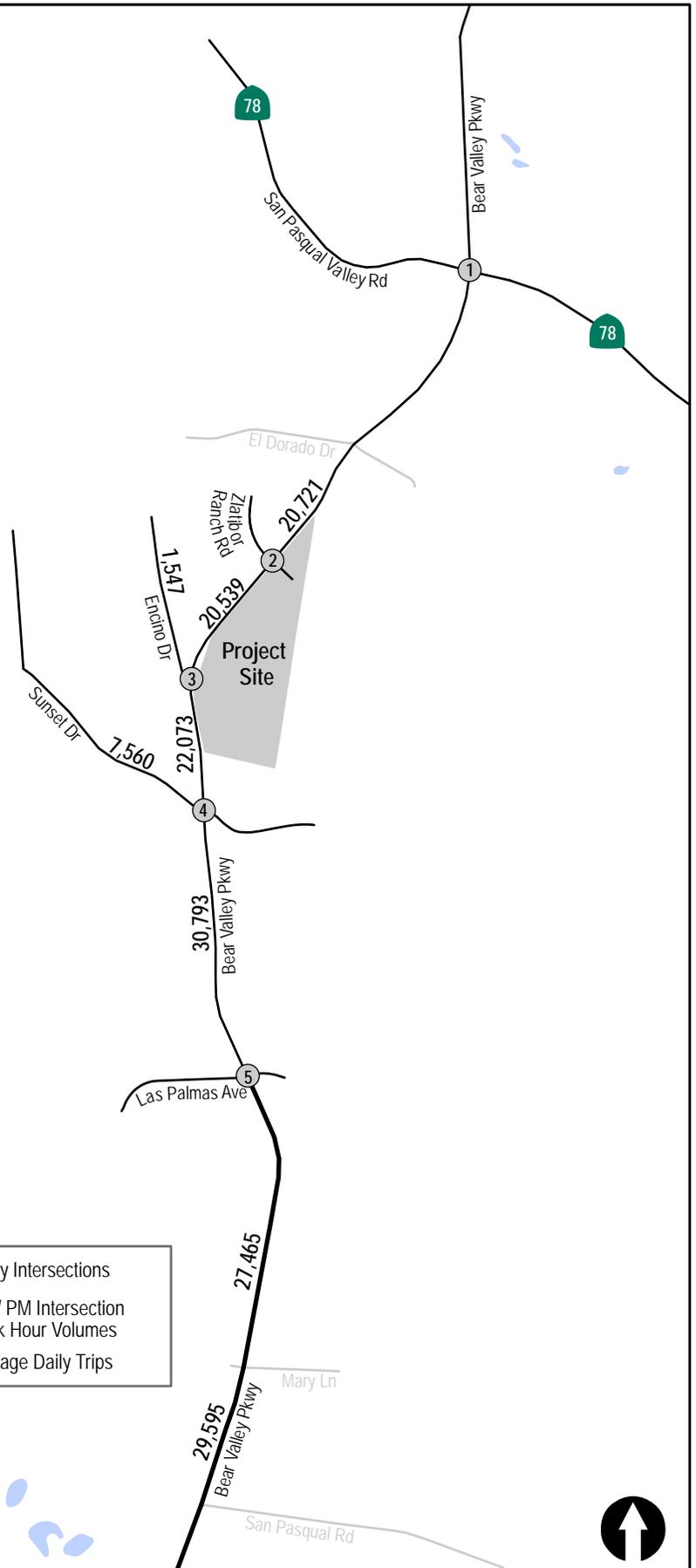


<p>①</p> <p>18 / 29 680 / 420 84 / 63</p> <p>82 / 65 508 / 448 154 / 112</p> <p>Sn Pasq'l Vly Rd</p> <p>18 / 26 358 / 498 129 / 114</p> <p>Bear Vly Pkwy</p> <p>106 / 106 325 / 799 100 / 211</p>
<p>②</p> <p>0 / 1 895 / 626 4 / 12</p> <p>5 / 2 26 / 14</p> <p>Zlaptr Rnch Rd</p> <p>2 / 1 9 / 3</p> <p>Bear Vly Pkwy</p> <p>3 / 6 493 / 1,106 9 / 27</p> <p>Proj Dwy.</p>
<p>③</p> <p>24 / 11 906 / 632</p> <p>Encino Dr</p> <p>3 / 6 101 / 35</p> <p>Bear Vly Pkwy</p> <p>90 / 69 502 / 1133</p>
<p>④</p> <p>10 / 13 1034 / 660 3 / 4</p> <p>17 / 18 33 / 23 13 / 4</p> <p>Sunset Dr</p> <p>16 / 23 4 / 25 674 / 280</p> <p>Bear Vly Pkwy</p> <p>398 / 195 579 / 1164 4 / 4</p>
<p>⑤</p> <p>343 / 48 1382 / 861 5 / 4</p> <p>5 / 1 10 / 0 29 / 17</p> <p>Las Palmas Av</p> <p>220 / 51 17 / 3 139 / 23</p> <p>Bear Vly Pkwy</p> <p>140 / 21 798 / 1311 16 / 26</p>

① Study Intersections

AM / PM Peak Hour Volumes

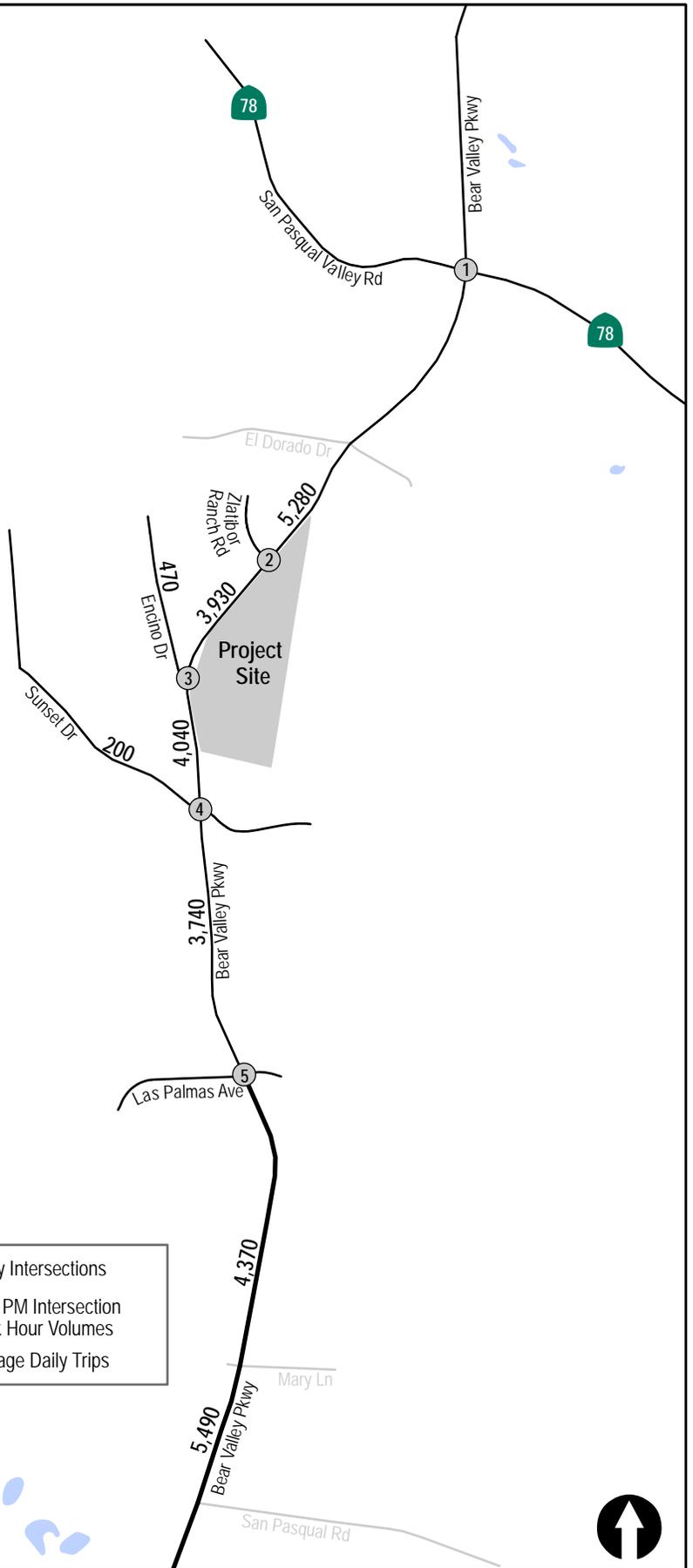
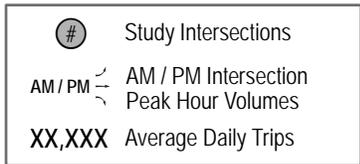
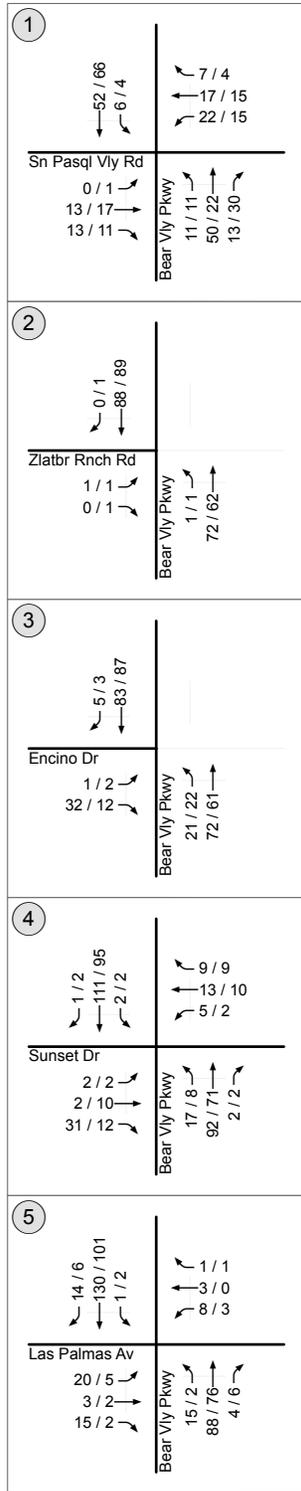
XX,XXX Average Daily Trips



## 8.0 CUMULATIVE GROWTH TRAFFIC VOLUMES

Cumulative projects are other projects in the study area that will add traffic to the local circulation system in the near future. LLG coordinated directly with City of Escondido and County of San Diego staff to determine and obtain cumulative projects' traffic volume information to be included for analysis. Based on coordination with the City, LLG interpolated growth between Year 2035 and existing Year 2014 traffic counts. Typical annual growth ranged between 2-5% at study area intersections and segments. Location-specific growth factors were applied to each study area location for a period of five (5) years to arrive at near-term baseline conditions which are analyzed in this report as "+ Cumulative Growth" scenarios.

*Figure 8-1* shows the total cumulative growth traffic volumes. *Figure 8-2* shows the existing + cumulative growth traffic volumes. *Figure 8-3* shows the existing + project + cumulative growth traffic volumes.

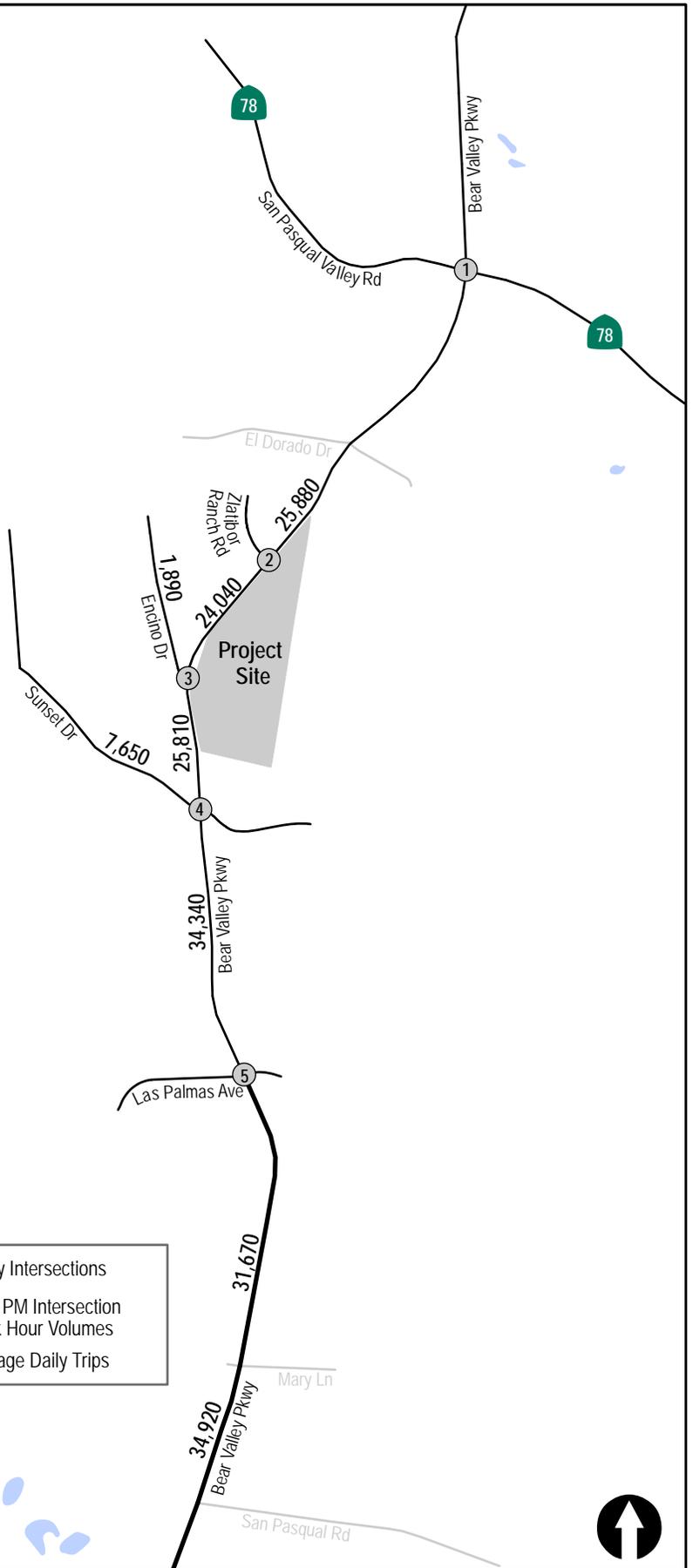


<p>①</p> <p>18 / 29 711 / 484 90 / 67</p> <hr/> <p>Sn Pasq'l Vly Rd</p> <p>18 / 27 371 / 515 139 / 117</p> <p>Bear Vly Pkwy</p> <p>89 / 69 525 / 463 176 / 126</p> <p>115 / 116 373 / 820 112 / 241</p>
<p>②</p> <p>0 / 2 983 / 715</p> <hr/> <p>Zlatbr Rnch Rd</p> <p>3 / 2 9 / 4</p> <p>Bear Vly Pkwy</p> <p>4 / 7 565 / 1,168</p>
<p>③</p> <p>17 / 8 975 / 711</p> <hr/> <p>Encino Dr</p> <p>3 / 6 133 / 47</p> <p>Bear Vly Pkwy</p> <p>111 / 91 566 / 1,168</p>
<p>④</p> <p>8 / 13 1,134 / 749 5 / 6</p> <hr/> <p>Sunset Dr</p> <p>14 / 14 6 / 35 705 / 292</p> <p>Bear Vly Pkwy</p> <p>26 / 27 46 / 33 18 / 6</p> <p>415 / 203 667 / 1,221 6 / 6</p>
<p>⑤</p> <p>355 / 53 1,503 / 957 6 / 6</p> <hr/> <p>Las Palmas Av</p> <p>239 / 54 20 / 5 154 / 25</p> <p>Bear Vly Pkwy</p> <p>6 / 2 13 / 0 37 / 20</p> <p>155 / 23 883 / 1,375 20 / 32</p>

① Study Intersections

AM / PM Peak Hour Volumes

XX,XXX Average Daily Trips

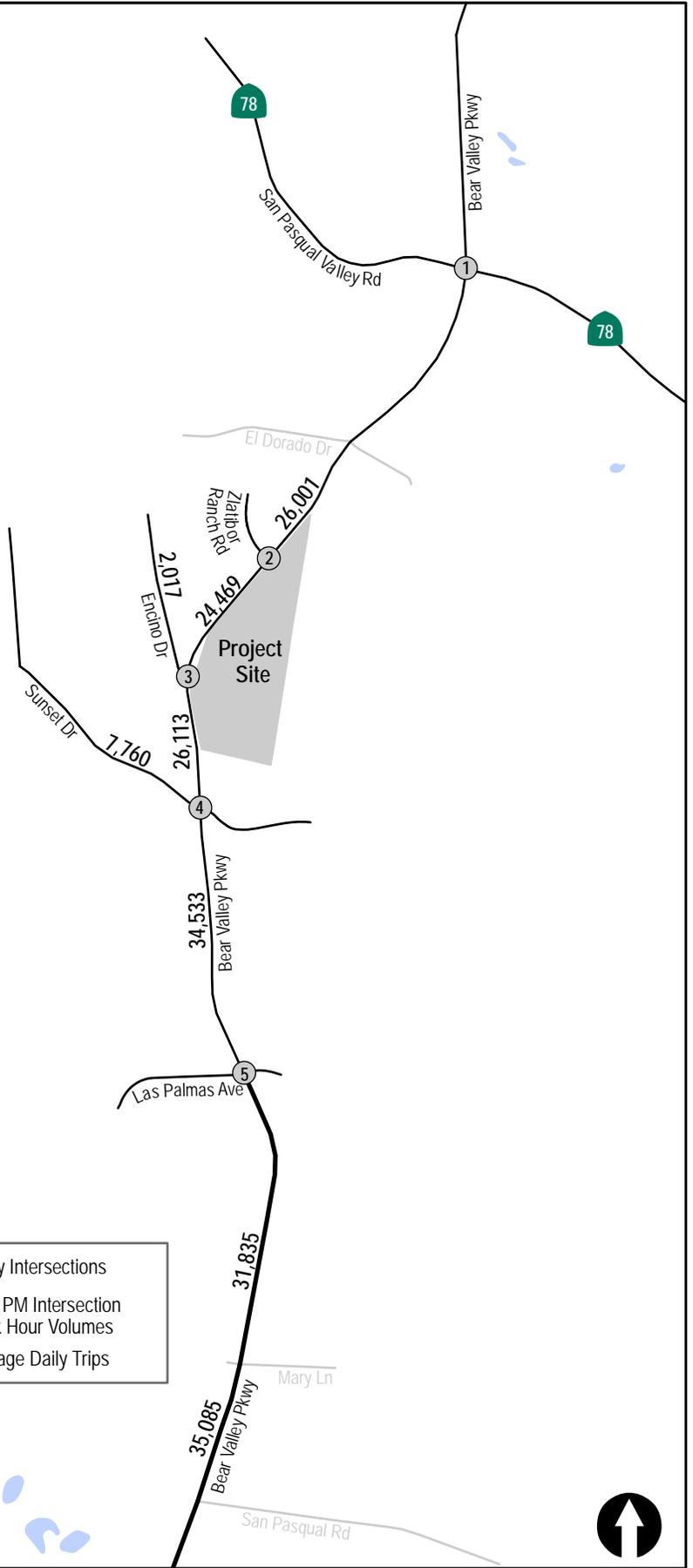


<p>①</p> <p>18 / 29 712 / 486 90 / 67</p> <hr/> <p>Sn Pasq'l Vly Rd</p> <p>18 / 27 371 / 515 142 / 125</p> <p>Bear Vly Pkwy</p> <p>89 / 69 525 / 463 176 / 127</p> <p>117 / 117 375 / 821 113 / 241</p>
<p>②</p> <p>0 / 2 983 / 715 4 / 12</p> <hr/> <p>Zlaptr Rnch Rd</p> <p>3 / 2 9 / 4</p> <p>Bear Vly Pkwy</p> <p>5 / 2 26 / 14</p> <p>4 / 7 565 / 1,168 9 / 27</p> <p>Proj Dwy.</p>
<p>③</p> <p>29 / 14 989 / 719</p> <hr/> <p>Encino Dr</p> <p>4 / 8 133 / 47</p> <p>Bear Vly Pkwy</p> <p>111 / 91 574 / 1194</p>
<p>④</p> <p>11 / 15 1145 / 755 5 / 6</p> <hr/> <p>Sunset Dr</p> <p>18 / 25 6 / 35 705 / 292</p> <p>Bear Vly Pkwy</p> <p>26 / 27 46 / 33 18 / 6</p> <p>415 / 203 671 / 1235 6 / 6</p>
<p>⑤</p> <p>357 / 54 1512 / 962 6 / 6</p> <hr/> <p>Las Palmas Av</p> <p>240 / 56 20 / 5 154 / 25</p> <p>Bear Vly Pkwy</p> <p>6 / 2 13 / 0 37 / 20</p> <p>155 / 23 886 / 1387 20 / 32</p>

① Study Intersections

AM / PM Peak Hour Volumes

XX,XXX Average Daily Trips



## 9.0 ANALYSIS OF NEAR-TERM SCENARIOS

The following is a summary of the operational analyses for the various street-system components for the near-term traffic scenarios.

### 9.1 Existing + Project

#### 9.1.1 Intersection Analysis

**Table 9-1** summarizes the peak hour intersection operations with the addition of Project traffic. **Table 9-1** shows that no study area intersections are calculated to degrade in LOS due to Project development. The Project plans to signalize the Bear Valley Parkway/ Zlatibor Ranch Road intersection, where the main Project access point is to be located. Thus, LOS improves at this location under this scenario.

The allowable increase in delay at the LOS D or worse operating intersections is 2.0 seconds. As shown in **Table 9-1**, the Project-attributable increase is less than this amount.

#### 9.1.2 Segment Operations

**Table 9-2** summarizes the roadway segment operations with the addition of Project traffic. As seen in **Table 9-2**, with the addition of Project traffic, six (6) study area segments on Bear Valley Parkway are calculated to operate at LOS D or worse. However, based on the established significance criteria, no significant segment impacts are calculated at these locations. It should be noted that the two Bear Valley Parkway segments adjacent to the property are analyzed with a modest increase in capacity of 500 ADT to reflect the additional northbound lane that will be constructed as a Project feature. As such, a resulting negative V/C increase is calculated and no impacts occur despite poor LOS operations.

The Project contribution to the remaining four (4) segments calculated at LOS D or worse is less than the maximum allowable 0.02 increase in V/C ratio and therefore no significant impacts are calculated at these locations.

### 9.2 Existing + Cumulative Growth

#### 9.2.1 Intersection Analysis

**Table 9-1** summarizes the peak hour intersection operations with the addition of cumulative growth traffic. **Table 9-1** shows that all study area intersections are calculated to operate at LOS D or worse, except for the Bear Valley Parkway/ Zlatibor Ranch Road intersection, which continues to operate at LOS C.

#### 9.2.2 Segment Operations

**Table 9-2** summarizes the roadway segment operations with the addition of cumulative growth traffic. As seen in **Table 9-2**, four Bear Valley Parkway segments (from Eldorado Drive to Las Palmas Avenue) are calculated to continue to operate at LOS F. Additionally, Bear Valley Parkway from Las Palmas Avenue to San Pasqual Road is calculated to operate at LOS D/E. Two segments are calculated to operate at LOS A or B.

### 9.3 Existing + Project + Cumulative Growth

#### 9.3.1 Intersection Analysis

*Table 9-1* summarizes the peak hour intersection operations for Existing + Cumulative Growth + Project conditions. *Table 9-1* shows that all but one of the study area intersections are calculated to operate at LOS D or worse. Based on the 2.0 second allowable increase in delay, significant impacts are calculated for the following:

- **Bear Valley Parkway/ Encino Drive – LOS F/E in the AM/PM peak hour**

#### 9.3.2 Segment Operations

*Table 9-2* summarizes the roadway segment operations for the Existing + Cumulative Growth + Project conditions. As seen in *Table 9-2*, with the addition of Project and cumulative growth traffic, six (6) study area segments are calculated to continue to operate at LOS D or worse as compared to Existing + Cumulative Project traffic. Based on the established significance criteria, no significant impacts are calculated at any locations. Again, a modest increase in capacity is assumed for the two Bear Valley Parkway segments that will be improved with a partial northbound lane as part of the Project development. This increase results in a negative increase in V/C.

The Project contribution to the remaining four (4) segments calculated at LOS D or worse is less than the allowable 0.02 increase in V/C ratio and therefore no significant impacts are calculated at these locations.

TABLE 9-1  
NEAR-TERM INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Existing		Existing + Project			Existing + Cumulative Growth		Existing + Cumulative Growth + Project			Significant Impact?
			Delay <sup>a</sup>	LOS <sup>b</sup>	Delay	LOS	Δ <sup>c</sup>	Delay	LOS	Delay	LOS	Δ	
1. Bear Valley Parkway/ San Pasqual Valley Road (SR 78) <sup>e</sup>	Signal	AM	38.8	D	38.8	D	0.0	42.3	D	42.3	D	0.0	No
		PM	43.1	D	43.1	D	0.0	65.0	E	65.0	E	0.0	No
2. Bear Valley Pkwy/ Zlatibor Ranch Rd (Project Driveway) <sup>d</sup>	OWSC <sup>e</sup>	AM	17.7	C	6.5	A	(11.2)	19.7	C	9.7	A	(10.0)	No
		PM	15.8	C	18.1	B	2.3	18.2	C	27.6	C	9.4	No
3. Bear Valley Parkway/ Encino Drive	OWSC <sup>e</sup>	AM	30.5	D	32.0	D	1.5	57.2	F	<b>61.1</b>	<b>F</b>	<b>3.9</b>	<b>Yes</b>
		PM	20.4	C	24.4	C	4.0	28.7	D	<b>35.4</b>	<b>E</b>	<b>6.7</b>	<b>Yes</b>
4. Bear Valley Parkway/ Sunset Drive	Signal	AM	121.6	F	121.7	F	0.1	135.1	F	135.8	F	0.7	No
		PM	41.6	D	42.0	D	0.4	61.4	E	62.4	E	1.0	No
5. Bear Valley Parkway/ Las Palmas Avenue	Signal	AM	44.5	D	45.5	D	1.0	61.2	E	62.4	E	1.2	No
		PM	6.7	A	6.8	A	0.1	8.9	A	9.1	A	0.2	No

**Footnotes:**

1. Average delay expressed in seconds per vehicle.
2. Level of Service.
3. Δ denotes an increase in delay due to project.
4. Intersection is signalized with construction of Project driveway in “with Project” scenarios.
5. OWSC – One-Way Stop Controlled intersection. Minor street left turn delay is reported.

SIGNALIZED		UNSIGNALIZED	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

**TABLE 9-2  
NEAR-TERM STREET SEGMENT OPERATIONS**

Street Segment	Capacity (LOS E) <sup>a</sup>	Existing			Existing + Project				Existing + Cumulative Projects			Existing + Cumulative Projects + Project				Sig Impact ?
		ADT <sup>b</sup>	LOS <sup>c</sup>	V/C <sup>d</sup>	ADT	LOS	V/C	Δ <sup>e</sup>	ADT	LOS	V/C	ADT	LOS	V/C	Δ <sup>e</sup>	
<b>Bear Valley Parkway</b>																
Eldorado Dr to Zlatibor Ranch Rd	15,000	20,600	F	1.373	20,721	F	1.381	0.008	25,880	F	1.725	26,001	F	1.733	0.008	No
Zlatibor Ranch Rd to Encino Dr	15,000/ 15,500	20,110	F	1.341	20,539	F	1.325	(0.016)	24,040	F	1.603	24,469	F	1.579	(0.024)	No
Encino Dr to Sunset Dr	15,000/ 15,500	21,770	F	1.451	22,073	F	1.424	(0.027)	25,810	F	1.721	26,113	F	1.685	(0.036)	No
Sunset Drive to Las Palmas Ave	15,000	30,600	F	2.040	30,793	F	2.053	0.013	34,340	F	2.289	34,533	F	2.302	0.013	No
Las Palmas Ave to Mary Lane	37,000	27,300	C	0.738	27,465	D	0.742	0.004	31,670	D	0.856	31,835	D	0.860	0.004	No
Mary Lane to San Pasqual Road	37,000	29,430	D	0.795	29,595	D	0.800	0.004	34,920	E	0.944	35,085	E	0.948	0.004	No
<b>Encino Drive</b>																
West of Bear Valley Parkway	15,000	1,420	A	0.095	1,547	A	0.103	0.008	1,890	A	0.126	2,017	A	0.134	0.008	No
<b>Sunset Drive</b>																
West of Bear Valley Parkway	15,000	7,450	B	0.497	7,560	B	0.504	0.007	7,650	B	0.510	7,760	B	0.517	0.007	No

**Footnotes:**

a. Capacities based on the *City of Escondido Roadway Classification* (See Table 4-3). For “without Project” evaluation, the existing Local Collector capacity of 15,000 ADT is used. For “with Project” evaluation, an increased capacity of 15,500 is used to reflect the additional northbound lane that will be provided along the Project frontage as part of the Project development. (X.XXX) = negative changes in V/C accordingly.

b. Average Daily Traffic

c. Level of Service

d. Volume to Capacity ratio

e. Δ denotes a Project-induced increase in the Volume to Capacity (V/C) ratio.

f. Δ denotes a project-induced increase in the volume to capacity ratio.

## 10.0 ANALYSIS OF BUILDOUT SCENARIO

### 10.1 Buildout

Buildout traffic volumes were obtained from the SANDAG Series 12 traffic model (Year 2035) based on consultation with City Staff.

*Figure 10-1* shows the Year 2035 Buildout traffic volumes. *Figure 10-2* shows Year 2035 Buildout + Project traffic volumes.

*Table 10-1* summarizes the roadway segment operations for Year 2035. As seen in *Table 10-1*, all Bear Valley Parkway segments within the study area are calculated to operate at LOS D or better with the exception of Bear Valley Parkway (Mary Lane to San Pasqual Road), which operates at LOS E. The Encino Drive and Sunset Drive segments are calculated to operate at LOS B or better.

### 10.2 Buildout + Project

*Table 10-1* summarizes the roadway segment operations for Buildout with the addition of Project traffic. As seen in *Table 10-1* the LOS remains unchanged with the addition of Project traffic. The Project-attributable increases in V/C to the one LOS E-operating segment does not exceed the allowable 0.02.

**TABLE 10-1  
LONG-TERM STREET SEGMENT OPERATIONS**

Street Segment	Adopted Circulation Element Capacity (LOS E) <sup>a</sup>	Buildout			Buildout With Project			Δ <sup>e</sup>	Sig? <sup>f</sup>
		ADT <sup>b</sup>	LOS <sup>c</sup>	V/C <sup>d</sup>	ADT	LOS	V/C		
<b>Bear Valley Parkway</b>									
Eldorado Drive to Zlatibor Ranch Road	37,000	23,400	C	0.632	23,521	C	0.636	0.004	No
Zlatibor Ranch Road to Encino Drive	37,000	23,400	C	0.632	23,829	C	0.644	0.012	No
Encino Drive to Sunset Drive	37,000	24,400	C	0.659	24,703	C	0.668	0.009	No
Sunset Drive to Las Palmas Avenue	50,000	39,600	D	0.792	39,793	D	0.796	0.004	No
Las Palmas Avenue to Mary Lane	50,000	39,900	D	0.798	40,065	D	0.801	0.003	No
Mary Lane to San Pasqual Road	50,000	42,800	E	0.856	42,965	E	0.859	0.003	No
<b>Encino Drive</b>									
Amparo Drive to Bear Valley Parkway	15,000	2,200	A	0.147	2,327	A	0.155	0.008	No
<b>Sunset Drive</b>									
Reill View Drive to Bear Valley Parkway	15,000	6,000	B	0.400	6,110	B	0.407	0.007	No

**Footnotes:**

- a. Capacity based on City of Escondido's roadway classification Table.
- b. Average Daily Traffic.
- c. Level of Service.
- d. Volume to Capacity.
- e. Δ denotes a Project-induced increase in the Volume to Capacity (V/C) ratio.
- f. Sig = significant Project impact based on Significance Criteria.



Figure 10-1

Year 2035 Traffic Volumes



Figure 10-2

Year 2035 + Project Traffic Volumes

661 BEAR VALLEY

## 11.0 PROJECT ACCESS

Access to the proposed project is via two driveway along Bear Valley Parkway. Primary access is proposed via a signalized full access driveway aligned opposite of Zlatibor Ranch Road, on the northern portion of the site. Secondary, emergency-only access is proposed via an unsignalized driveway located on the central/southern portion of the site. 100% of project traffic was distributed through the main signalized driveway.

The main project driveway was assumed to have two outbound lanes (a shared through/left and a right turn lane). A dedicated single northbound right-turn lane and southbound left-turn lane were also assumed.

*Table 11-1* restates the driveway operations as proposed.

TABLE 11-1  
PROJECT DRIVEWAY OPERATIONS

Intersection	Control Type	Peak Hour	Existing + Project		Existing + Cumulative Projects + Project		Significant Impact?
			Delay <sup>a</sup>	LOS <sup>b</sup>	Delay	LOS	
Bear Valley Parkway/ Main Project Driveway	Signal <sup>c</sup>	AM	6.5	A	9.7	A	No
		PM	18.1	B	27.6	C	No

**Footnotes:**

- Average delay expressed in seconds per vehicle.
- Level of Service.
- The traffic signal is assumed as a proposed feature, not a mitigation measure.

SIGNALIZED	
DELAY/LOS THRESHOLDS	
Delay	LOS
0.0 ≤ 10.0	A
10.1 to 20.0	B
20.1 to 35.0	C
35.1 to 55.0	D
55.1 to 80.0	E
≥ 80.1	F

## 12.0 SIGNIFICANCE OF IMPACTS AND MITIGATION MEASURES

Per the City of Escondido significance thresholds and the analysis methodologies presented in this report, Project-related and cumulative traffic are calculated to cause significant impacts within the study area. The following section lists the significant impacts and provides recommendations for mitigation measures to address operating deficiencies.

### 12.1 Significant Impacts Prior to Mitigation

#### 12.1.1 Intersections

- Intersection #3: Bear Valley Parkway and Encino Drive  
(Cumulative only)

### 12.2 Mitigation Measures

#### 12.2.1 Intersections

**Intersection #3: Bear Valley Parkway and Encino Drive** – The cumulative impact at this location will be mitigated by a fair-share contribution to realignment and signalization of the unsignalized intersection. It is proposed that the intersection be realigned such that the Encino Drive leg is simplified to include one approach lane and one departure lane. Currently, there are two departure lanes on Encino Drive from Bear Valley Parkway; one serving left-turns from the northbound direction, and one serving right-turns from the southbound direction. Also, the median separating the approach and departure lanes is proposed to be reduced as Encino Drive is "squared up" (to a 90-degree angle) with Bear Valley Parkway. These proposed improvements are consistent with the designs shown in the Specific Alignment Plan.

*Table 12-1* shows that the development of this mitigation measure would result in LOS C or better peak hour operations.

*Figure 12-1* shows a summary of the facilities to which fair-share contributions are proposed. Fair-share contributions to additional locations other than intersection #3 described above included on this figure, and described in the following section. *Appendix C* contains the post-mitigation intersection analysis worksheets.

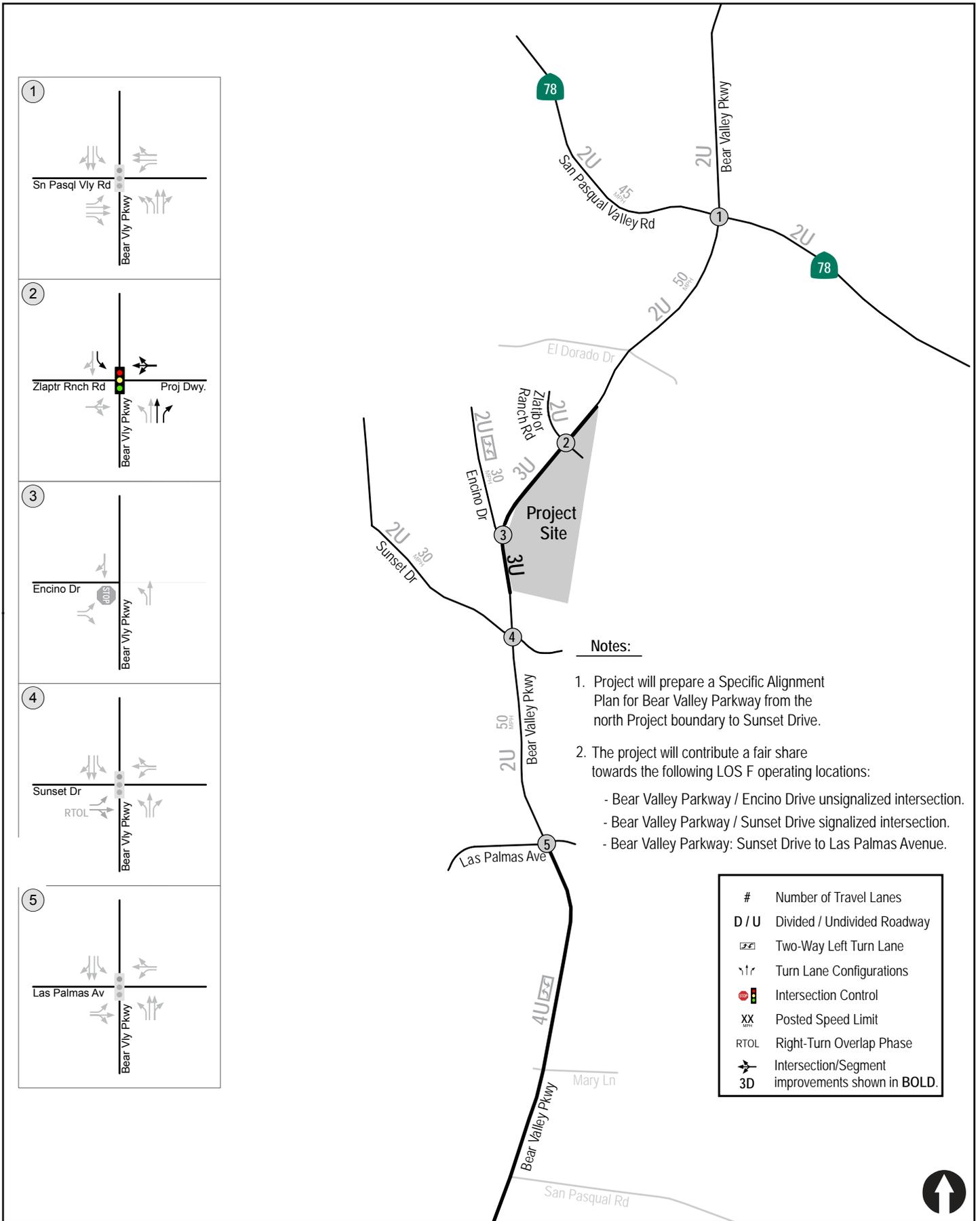
**TABLE 12-1  
POST-MITIGATION INTERSECTION OPERATIONS**

Intersection	Control Type (Mitigation)	Peak Hour	Existing		Existing + Cumulative Projects + Project (with Mitigation)	
			Delay <sup>a</sup>	LOS <sup>b</sup>	Delay	LOS
2. Bear Valley Parkway / Encino Drive	OWSC <sup>c</sup> (Signal)	AM	30.5	D	30.7	C
		PM	20.4	C	8.2	A

**Footnotes:**

- a. Average delay expressed in seconds per vehicle.
- b. Level of Service.
- c. One-Way Stop Controlled intersection, Minor street left-turn delay is reported.

SIGNALIZED		UNSIGNALIZED	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F



### 13.0 PROJECT FAIR SHARE CONTRIBUTIONS

The analysis in *Section 9.3* shows that based on the City’s published criteria, the Project contribution to the near-term circulation system exceeds the allowable thresholds of significance with the addition of cumulative traffic volumes at the following location:

- Intersections:
  - Bear Valley Parkway/Encino Drive (LOS F/E, AM/PM peak hours, respectively)

As discussed earlier, this a cumulative impact that requires a fair share contribution as mitigation.

**Table 13–1** shows the fair share summary for this impact’s mitigation. The mitigation fair share contribution is calculated to be \$4,000.

**TABLE 13–1  
FAIR SHARE SUMMARY  
SIGNIFICANT AND CUMULATIVE LOS E/F LOCATIONS**

Location	Condition	Fair Share Percentage <sup>a</sup>	Improvement Cost <sup>b</sup>	Fair Share Amount <sup>c</sup>
Bear Valley Parkway/ Encino Drive (Unsignalized Intersection)	Near-Term	2.0%	\$200,000	\$4,000
<b>Subtotal – Significant and Cumulative LOS F Locations:</b>				<b>\$4,000</b>

**General Notes:**

1. This location exceeds the City’s published thresholds with the addition of cumulative traffic volumes. This is a significant and cumulative impact requiring a fair share contribution as mitigation.
2. See *Tables 9–1, 9–2 and 10–1* for summary of LOS calculations.

**Footnotes:**

- a. Fair Share Percentage is based on Total Project Peak Hour Volumes (PHVs) ÷ Total Existing + Cumulative + Project PHVs.
- b. Improvement Cost is provided by City of Escondido.
- c. Fair Share Amount is the Fair Share Percentage × Improvement Cost.

Additionally, there are the LOS F-operating intersections and street segments along the Bear Valley Parkway corridor to which the Project adds trips, but does not exceed the published thresholds:

- Intersections:
  - Bear Valley Parkway/Sunset Drive (LOS F)
- Segments:
  - Bear Valley Parkway: Eldorado Drive to Zlatibor Ranch Road (LOS F)
  - Bear Valley Parkway: Zlatibor Ranch Road to Encino Drive (LOS F)
  - Bear Valley Parkway: Encino Drive to Sunset Drive (LOS F)
  - Bear Valley Parkway: Sunset Drive to Las Palmas Avenue (LOS F)

Again, the Project contribution does not exceed the City’s allowable thresholds, so no direct or cumulative significant impacts are concluded at these locations. However, the *City of Escondido Traffic Impact Study Guideline (2014)* states that projects adding traffic to LOS F-operating locations should contribute towards improvements, regardless of the formal findings of significance. The Project is providing frontage improvements (second NB lane and signal at Zlatibor Ranch Road) that will positively affect operations on the first three segments listed above; thus no additional fair share contribution is required to comply with the guideline for these three locations. This leaves the following two LOS F (but not significantly impacted) locations to require a fair share contribution:

- Intersections:
  - Bear Valley Parkway/Sunset Drive (LOS F)
- Segments:
  - Bear Valley Parkway: Sunset Drive to Las Palmas Avenue (LOS F)

**Table 13–2** shows a summary of the fair share calculations for these locations. *Figure 12–1* also shows the geographic locations of each.

**TABLE 13–2  
FAIR SHARE SUMMARY  
NON-SIGNIFICANT LOS F LOCATIONS**

Location	Condition	Fair Share Percentage	Improvement Cost <sup>c</sup>	Fair Share Amount <sup>d</sup>
Bear Valley Parkway: Sunset Drive to Las Palmas Avenue (Street Segment)	Near-Term	0.5% <sup>a</sup>	\$5,000,000	\$25,000
Bear Valley Parkway/ Sunset Drive (Signalized Intersection)	Near-Term	0.5% <sup>b</sup>	\$200,000	\$1,000
<b>Subtotal – Non-Significant LOS F Locations:</b>				<b>\$26,000</b>

**General Notes:**

1. While not significantly impacted, these locations should be improved per the City’s *Traffic Impact Study Guideline (2014)*.
2. See *Tables 9–1, 9–2 and 10–1* for summary of LOS calculations.

**Footnotes:**

- a. Fair Share Percentage is based on Project ADTs ÷ Existing + Cumulative + Project ADTs.
- b. Fair Share Percentage is based on Total Project PHVs ÷ Total Existing + Cumulative + Project PHVs.
- c. Improvement Cost is provided by City of Escondido.
- d. Fair Share Amount is the Fair Share Percentage × Improvement Cost.

To address this provision in the *Traffic Impact Study Guideline*, the Project will contribute a fair share sum of \$26,000 towards Bear Valley Parkway corridor improvements.

***In total, the Project will contribute \$30,000 of fair share monies to: a) mitigate cumulative impacts, and b) comply with the City’s published traffic impact guideline recommendations.***

*End of Report*

TECHNICAL APPENDICES

**661 BEAR VALLEY**

Escondido, California  
January 18, 2017

LLG Ref. 3-13-2299

**Linscott, Law &  
Greenspan, Engineers**

4542 Ruffner Street  
Suite 100

San Diego, CA 92111

**858.300.8800** T

858.300.8810 F

[www.llgengineers.com](http://www.llgengineers.com)

This Page Left Blank Intentionally

**APPENDIX A**  
**INTERSECTION AND SEGMENT COUNT SHEETS**

This Page Left Blank Intentionally

# Turn Count Summary

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



**Location:** SR 78 @ Bear Valley Parkway  
**Date of Count:** Wednesday, February 26, 2014  
**Analysts:** LV/CD  
**Weather:** Sunny  
**AVC Proj No:** 14-0168



# Vehicular Count

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



**Location:** SR 78 @ Bear Valley Parkway

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
7:00 AM	3	186	31	16	102	36	25	72	15	19	78	1	584
7:15 AM	5	141	28	16	124	28	25	67	20	22	77	1	554
7:30 AM	8	171	15	30	141	47	29	76	20	45	84	5	671
7:45 AM	4	187	29	18	118	45	29	78	26	28	85	4	651
8:00 AM	2	143	18	21	132	35	18	79	27	16	96	6	593
8:15 AM	4	158	22	13	117	27	23	90	31	37	93	3	618
8:30 AM	10	109	10	17	161	31	8	67	18	26	86	3	546
8:45 AM	3	135	5	9	111	27	13	62	15	25	85	3	493
<b>Total</b>	<b>39</b>	<b>1,230</b>	<b>158</b>	<b>140</b>	<b>1,006</b>	<b>276</b>	<b>170</b>	<b>591</b>	<b>172</b>	<b>218</b>	<b>684</b>	<b>26</b>	<b>4,710</b>

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

Intersection PHF : **0.94**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	18	659	84	82	508	154	99	323	104	126	358	18	2,533
PHF	0.56	0.88	0.72	0.68	0.90	0.82	0.85	0.90	0.84	0.70	0.93	0.75	0.94
Movement PHF		0.86			0.85			0.91			0.94		0.94

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
4:00 PM	11	114	15	21	107	27	36	178	40	26	127	5	707
4:15 PM	7	116	20	15	117	13	39	177	29	21	114	7	675
4:30 PM	6	129	22	11	102	23	33	151	34	17	127	6	661
4:45 PM	5	128	16	8	105	34	47	192	39	27	114	5	720
5:00 PM	4	84	17	19	113	19	44	170	29	37	133	8	677
5:15 PM	10	105	19	24	117	25	72	226	13	18	130	8	767
5:30 PM	10	101	11	14	113	33	48	210	24	24	121	5	714
5:45 PM	8	121	15	13	77	25	55	229	29	23	116	5	716
<b>Total</b>	<b>61</b>	<b>898</b>	<b>135</b>	<b>125</b>	<b>851</b>	<b>199</b>	<b>374</b>	<b>1,533</b>	<b>237</b>	<b>193</b>	<b>982</b>	<b>49</b>	<b>5,637</b>

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

Intersection PHF : **0.94**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	29	418	63	65	448	111	211	798	105	106	498	26	2878
PHF	0.73	0.816	0.829	0.677	0.957	0.816	0.733	0.883	0.673	0.716	0.936	0.813	0.94
Movement PHF		0.86			0.94			0.90			0.88		0.94

# Turn Count Summary

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



**Location:** Encino Drive @ Bear Valley Parkway

**Date of Count:** Wednesday, February 26, 2014

**Analysts:** LV/CD

**Weather:** Sunny

**AVC Proj No:** 14-0168





**Location:** Encino Drive @ Bear Valley Parkway

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
7:00 AM	2	233	0	0	0	0	0	105	11	30	0	1	382
7:15 AM	4	214	0	0	0	0	0	113	12	27	0	0	370
7:30 AM	1	250	0	0	0	0	0	123	23	20	0	1	418
7:45 AM	3	199	0	0	0	0	0	131	19	41	0	0	393
8:00 AM	8	228	0	0	0	0	0	103	24	28	0	1	392
8:15 AM	0	215	0	0	0	0	0	137	24	12	0	0	388
8:30 AM	1	187	0	0	0	0	0	89	7	8	0	0	292
8:45 AM	7	170	0	0	0	0	0	88	5	7	0	1	278
<b>Total</b>	<b>26</b>	<b>1,696</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>889</b>	<b>125</b>	<b>173</b>	<b>0</b>	<b>4</b>	<b>2,913</b>

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

Intersection PHF : **0.95**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	12	892	0	0	0	0	0	494	90	101	0	2	1,591
PHF	0.38	0.89	#####	#####	#####	#####	#####	0.90	0.94	0.62	#####	0.50	0.95
Movement PHF		0.90		#DIV/0!				0.91			0.63		0.95

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
4:00 PM	1	166	0	0	0	0	0	261	10	14	0	0	452
4:15 PM	0	144	0	0	0	0	0	231	12	9	0	0	396
4:30 PM	1	166	0	0	0	0	0	233	11	12	0	1	424
4:45 PM	3	172	0	0	0	0	0	267	18	14	0	3	477
5:00 PM	0	162	0	0	0	0	0	256	19	3	0	0	440
5:15 PM	1	141	0	0	0	0	0	292	15	10	0	0	459
5:30 PM	1	149	0	0	0	0	0	293	17	8	0	1	469
5:45 PM	0	168	0	0	0	0	0	290	11	6	0	0	475
<b>Total</b>	<b>7</b>	<b>1268</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2,123</b>	<b>113</b>	<b>76</b>	<b>0</b>	<b>5</b>	<b>3,592</b>

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

Intersection PHF : **0.97**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	5	624	0	0	0	0	0	1108	69	35	0	4	1845
PHF	0.42	0.907	#####	#####	#####	#####	#####	0.945	0.908	0.625	#####	0.333	0.97
Movement PHF		0.90		#DIV/0!				0.95			0.57		0.97

# Turn Count Summary

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



**Location:** Sunset Drive @ Bear Valley Parkway

**Date of Count:** Wednesday, February 26, 2014

**Analysts:** LV/CD

**Weather:** Sunny

**AVC Proj No:** 14-0168



# Vehicular Count

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



**Location:** Sunset Drive @ Bear Valley Parkway

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
7:00 AM	2	272	0	2	2	3	1	118	77	187	1	2	667
7:15 AM	3	250	0	3	12	3	1	123	113	197	2	1	708
7:30 AM	1	256	1	7	13	5	1	118	109	128	1	6	646
7:45 AM	1	245	2	5	6	2	1	144	99	162	0	3	670
8:00 AM	0	244	2	2	6	0	0	120	126	156	3	2	661
8:15 AM	5	283	2	2	6	4	0	160	112	44	1	2	621
8:30 AM	0	198	1	1	3	1	0	95	37	40	2	1	379
8:45 AM	3	164	1	1	2	0	1	95	36	40	6	3	352
<b>Total</b>	<b>15</b>	<b>1,912</b>	<b>9</b>	<b>23</b>	<b>50</b>	<b>18</b>	<b>5</b>	<b>973</b>	<b>709</b>	<b>954</b>	<b>16</b>	<b>20</b>	<b>4,704</b>

AM Intersection Peak Hour : **7:00 AM - 8:00 AM**

Intersection PHF : **0.95**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	7	1,023	3	17	33	13	4	503	398	674	4	12	2,691
PHF	0.58	0.94	0.38	0.61	0.63	0.65	1.00	0.87	0.88	0.86	0.50	0.50	0.95
Movement PHF		0.94			0.63			0.93			0.86		0.95

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
4:00 PM	2	180	1	0	4	2	4	270	80	63	4	2	612
4:15 PM	0	142	4	1	2	0	1	240	74	58	2	5	529
4:30 PM	0	190	3	2	2	0	1	243	61	71	3	0	576
4:45 PM	2	190	2	4	6	0	1	272	65	76	4	5	627
5:00 PM	1	160	1	1	5	1	1	276	49	72	12	1	580
5:15 PM	3	149	0	6	7	1	1	308	42	71	3	1	592
5:30 PM	5	155	1	7	5	2	1	294	39	61	6	5	581
5:45 PM	4	172	0	1	5	0	2	295	36	52	4	7	578
<b>Total</b>	<b>17</b>	<b>1,338</b>	<b>12</b>	<b>22</b>	<b>36</b>	<b>6</b>	<b>12</b>	<b>2,198</b>	<b>446</b>	<b>524</b>	<b>38</b>	<b>26</b>	<b>4,675</b>

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

Intersection PHF : **0.95**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	11	654	4	18	23	4	4	1150	195	280	25	12	2380
PHF	0.55	0.861	0.5	0.643	0.821	0.5	1	0.933	0.75	0.921	0.521	0.6	0.95
Movement PHF		0.86			0.80			0.96			0.93		0.95

# Turn Count Summary

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



**Location:** Las Palmas Avenue @ Bear Valley Parkway

**Date of Count:** Wednesday, February 26, 2014

**Analysts:** LV/CD

**Weather:** Sunny

**AVC Proj No:** 14-0168



# Vehicular Count

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



**Location:** Las Palmas Avenue @ Bear Valley Parkway

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
7:00 AM	25	468	0	1	1	10	3	215	6	5	1	4	739
7:15 AM	36	448	0	0	1	11	12	287	21	10	1	25	852
7:30 AM	86	313	1	0	1	3	2	152	38	29	2	41	668
7:45 AM	112	303	1	2	2	4	2	175	44	43	2	85	775
8:00 AM	107	309	3	3	6	11	0	181	37	57	12	68	794
8:15 AM	21	324	2	1	0	7	5	155	5	26	17	35	598
8:30 AM	7	214	3	1	1	5	6	114	3	6	0	16	376
8:45 AM	8	195	3	0	0	4	2	99	5	9	0	13	338
<b>Total</b>	<b>402</b>	<b>2,574</b>	<b>13</b>	<b>8</b>	<b>12</b>	<b>55</b>	<b>32</b>	<b>1,378</b>	<b>159</b>	<b>185</b>	<b>35</b>	<b>287</b>	<b>5,140</b>

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

Intersection PHF : **0.91**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	341	1,373	5	5	10	29	16	795	140	139	17	219	3,089
PHF	0.76	0.77	0.42	0.42	0.42	0.66	0.33	0.69	0.80	0.61	0.35	0.64	0.91
Movement PHF		0.89			0.55			0.74			0.68		0.91

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
4:00 PM	14	192	0	1	0	6	3	328	8	15	1	16	584
4:15 PM	16	212	0	0	1	3	10	295	5	7	0	7	556
4:30 PM	10	222	0	1	0	4	9	321	4	7	1	17	596
4:45 PM	19	190	2	0	0	3	8	361	7	4	0	10	604
5:00 PM	7	208	1	0	0	7	2	275	3	5	2	9	519
5:15 PM	11	236	1	0	0	3	7	342	7	7	0	13	627
5:30 PM	9	187	1	1	0	1	10	327	7	11	2	10	566
5:45 PM	5	245	1	0	0	2	9	336	3	4	0	8	613
<b>Total</b>	<b>91</b>	<b>1692</b>	<b>6</b>	<b>3</b>	<b>1</b>	<b>29</b>	<b>58</b>	<b>2,585</b>	<b>44</b>	<b>60</b>	<b>6</b>	<b>90</b>	<b>4,665</b>

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

Intersection PHF : **0.94**

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	47	856	4	1	0	17	26	1299	21	23	3	49	2346
PHF	0.62	0.907	0.5	0.25	#####	0.607	0.722	0.9	0.75	0.821	0.375	0.721	0.94
Movement PHF		0.91			0.64			0.89			0.75		0.94

# Turn Count Summary

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



**Location:** San Pasqual Road @ Bear Valley Parkway

**Date of Count:** Wednesday, February 26, 2014

**Analysts:** LV/CD

**Weather:** Sunny

**AVC Proj No:** 14-0168



# Vehicular Count

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



Location: San Pasqual Road @ Bear Valley Parkway

AM Period (7:00 AM - 9:00 AM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
7:00 AM	0	301	88	17	0	177	99	169	0	0	0	0	851
7:15 AM	0	332	71	13	0	232	119	316	0	0	0	0	1,083
7:30 AM	0	382	13	10	0	130	47	176	0	0	0	0	758
7:45 AM	0	368	23	27	0	94	56	229	0	0	0	0	797
8:00 AM	0	381	17	22	0	111	54	167	0	0	0	0	752
8:15 AM	0	432	22	13	0	103	71	142	0	0	0	0	783
8:30 AM	0	292	13	10	0	113	85	119	0	0	0	0	632
8:45 AM	0	248	12	6	0	78	73	117	0	0	0	0	534
Total	0	2,736	259	118	0	1,038	604	1,435	0	0	0	0	6,190

AM Intersection Peak Hour : 7:00 AM - 8:00 AM

Intersection PHF : 0.81

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	0	1,383	195	67	0	633	321	890	0	0	0	0	3,489
PHF	#####	0.91	0.55	0.62	#####	0.68	0.67	0.70	#####	#####	#####	#####	0.81
Movement PHF		0.98			0.71			0.70		#DIV/0!			0.81

PM Period (4:00 PM - 6:00 PM)													
	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
4:00 PM	0	235	17	15	0	90	96	322	0	0	0	0	775
4:15 PM	0	198	23	15	0	115	112	292	0	0	0	0	755
4:30 PM	0	183	40	11	0	113	121	323	0	0	0	0	791
4:45 PM	0	209	37	21	0	132	142	339	0	0	0	0	880
5:00 PM	0	212	47	8	0	102	149	344	0	0	0	0	862
5:15 PM	0	191	41	25	0	104	140	363	0	0	0	0	864
5:30 PM	0	184	21	23	0	109	112	351	0	0	0	0	800
5:45 PM	0	178	28	14	0	86	139	357	0	0	0	0	802
Total	0	1590	254	132	0	851	1,011	2,691	0	0	0	0	6,529

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

Intersection PHF : 0.97

	Southbound			Westbound			Northbound			Eastbound			TOTAL
	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
Volume	0	796	146	77	0	447	543	1397	0	0	0	0	3406
PHF	#####	0.939	0.777	0.77	#####	0.847	0.911	0.962	#####	#####	#####	#####	0.97
Movement PHF		0.91			0.86			0.96		#DIV/0!			0.97

# 24 Hour Segment Count

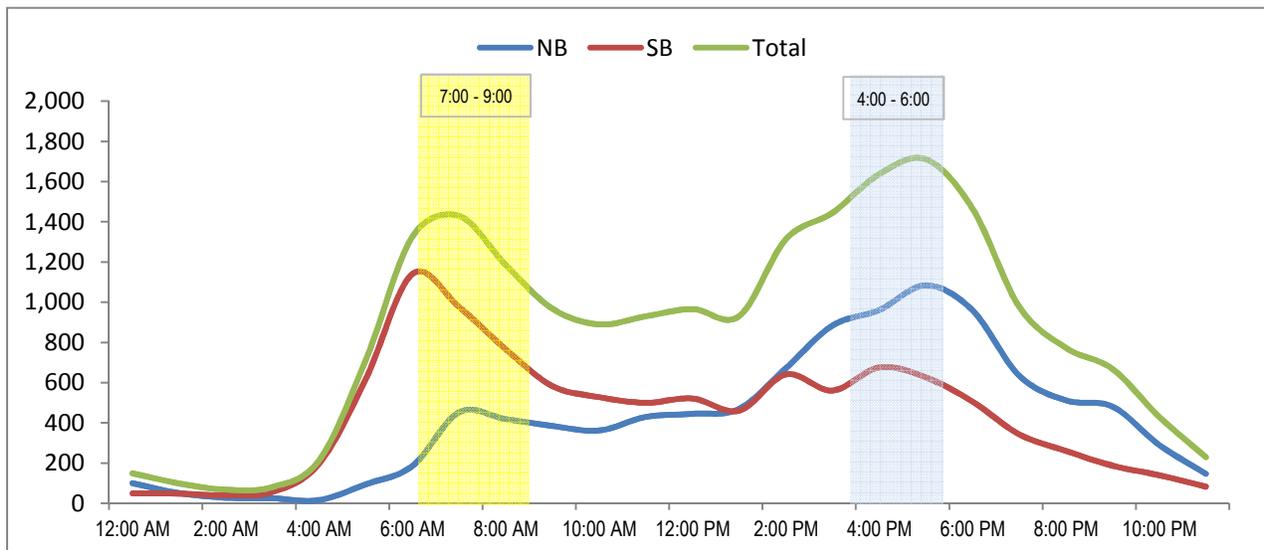
Accurate Video Counts Inc  
info@accuratevideocounts.com  
(619) 987-5136



**Location:** 1. Bear Valley Parkway btw Zlatibor Ranch Rd to Eldorado Rd  
**Orientation:** North-South  
**Date of Count:** Wednesday, February 26, 2014  
**Analysts:** DASH  
**Weather:** Sunny  
**AVC Proj. No:** 14-0168

24 Hour Segment Volume					20,601			
Time	Hourly Volume			Total	Time	Hourly Volume		
	NB	SB	Total			NB	SB	Total
12:00 AM - 1:00 AM	100	49	149	12:00 PM - 1:00 PM	445	521	966	
1:00 AM - 2:00 AM	51	48	99	1:00 PM - 2:00 PM	470	461	931	
2:00 AM - 3:00 AM	28	40	68	2:00 PM - 3:00 PM	672	641	1,313	
3:00 AM - 4:00 AM	25	56	81	3:00 PM - 4:00 PM	884	561	1,445	
4:00 AM - 5:00 AM	16	198	214	4:00 PM - 5:00 PM	961	676	1,637	
5:00 AM - 6:00 AM	95	618	713	5:00 PM - 6:00 PM	1,084	627	1,711	
6:00 AM - 7:00 AM	186	1,141	1,327	6:00 PM - 7:00 PM	960	506	1,466	
7:00 AM - 8:00 AM	453	976	1,429	7:00 PM - 8:00 PM	635	343	978	
8:00 AM - 9:00 AM	419	766	1,185	8:00 PM - 9:00 PM	512	261	773	
9:00 AM - 10:00 AM	385	583	968	9:00 PM - 10:00 PM	481	187	668	
10:00 AM - 11:00 AM	362	528	890	10:00 PM - 11:00 PM	290	140	430	
11:00 AM - 12:00 PM	430	500	930	11:00 PM - 12:00 AM	147	83	230	
<b>Total</b>	<b>2,550</b>	<b>5,503</b>	<b>8,053</b>	<b>Total</b>	<b>7,541</b>	<b>5,007</b>	<b>12,548</b>	

**24-Hour NB Volume 10,091**      **24-Hour SB Volume 10,510**



# 24 Hour Segment Count

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



**Location:** 2. Bear Valley Parkway btw Encino Dr to Zlatibor Ranch Rd

**Orientation:** North-South

**Date of Count:** Wednesday, February 26, 2014

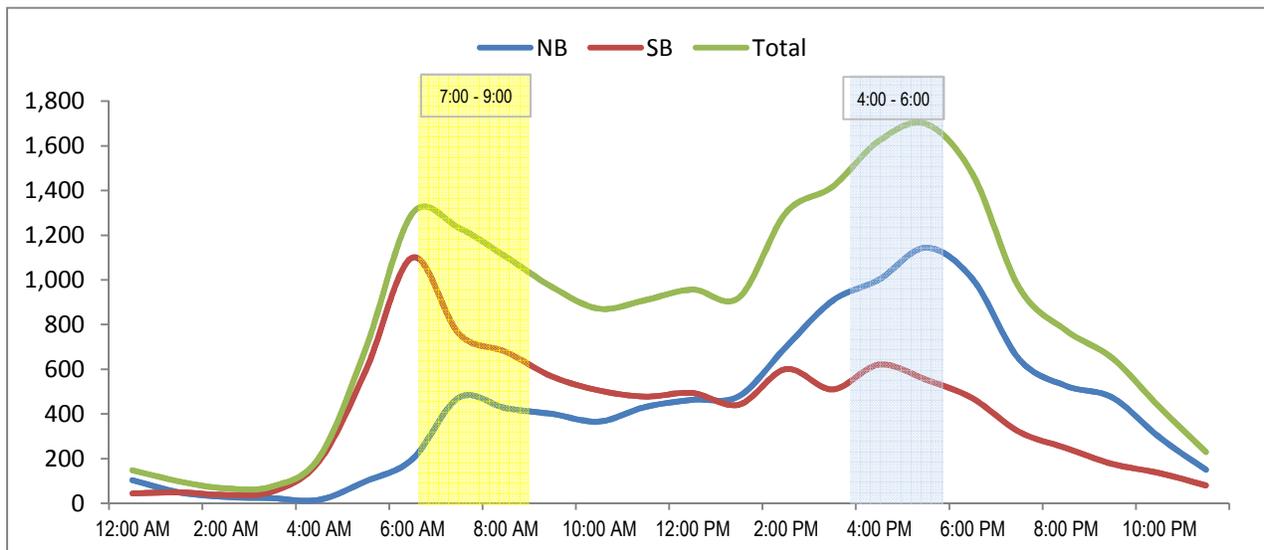
**Analysts:** DASH

**Weather:** Sunny

**AVC Proj. No:** 14-0168

24 Hour Segment Volume					20,111		
Time	Hourly Volume			Time	Hourly Volume		
	NB	SB	Total		NB	SB	Total
12:00 AM - 1:00 AM	104	44	148	12:00 PM - 1:00 PM	463	494	957
1:00 AM - 2:00 AM	49	49	98	1:00 PM - 2:00 PM	480	442	922
2:00 AM - 3:00 AM	29	38	67	2:00 PM - 3:00 PM	699	601	1,300
3:00 AM - 4:00 AM	23	53	76	3:00 PM - 4:00 PM	907	510	1,417
4:00 AM - 5:00 AM	16	189	205	4:00 PM - 5:00 PM	1,002	621	1,623
5:00 AM - 6:00 AM	99	595	694	5:00 PM - 6:00 PM	1,144	554	1,698
6:00 AM - 7:00 AM	198	1,100	1,298	6:00 PM - 7:00 PM	1,004	470	1,474
7:00 AM - 8:00 AM	474	758	1,232	7:00 PM - 8:00 PM	645	320	965
8:00 AM - 9:00 AM	426	678	1,104	8:00 PM - 9:00 PM	526	248	774
9:00 AM - 10:00 AM	400	567	967	9:00 PM - 10:00 PM	473	176	649
10:00 AM - 11:00 AM	366	505	871	10:00 PM - 11:00 PM	296	136	432
11:00 AM - 12:00 PM	432	478	910	11:00 PM - 12:00 AM	150	80	230
<b>Total</b>	<b>2,616</b>	<b>5,054</b>	<b>7,670</b>	<b>Total</b>	<b>7,789</b>	<b>4,652</b>	<b>12,441</b>

**24-Hour NB Volume 10,405**      **24-Hour SB Volume 9,706**





# 24 Hour Segment Count

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



**Location:** 3. Bear Valley Parkway btw Sunset Dr to Encino Dr

**Orientation:** North-South

**Date of Count:** Wednesday, February 26, 2014

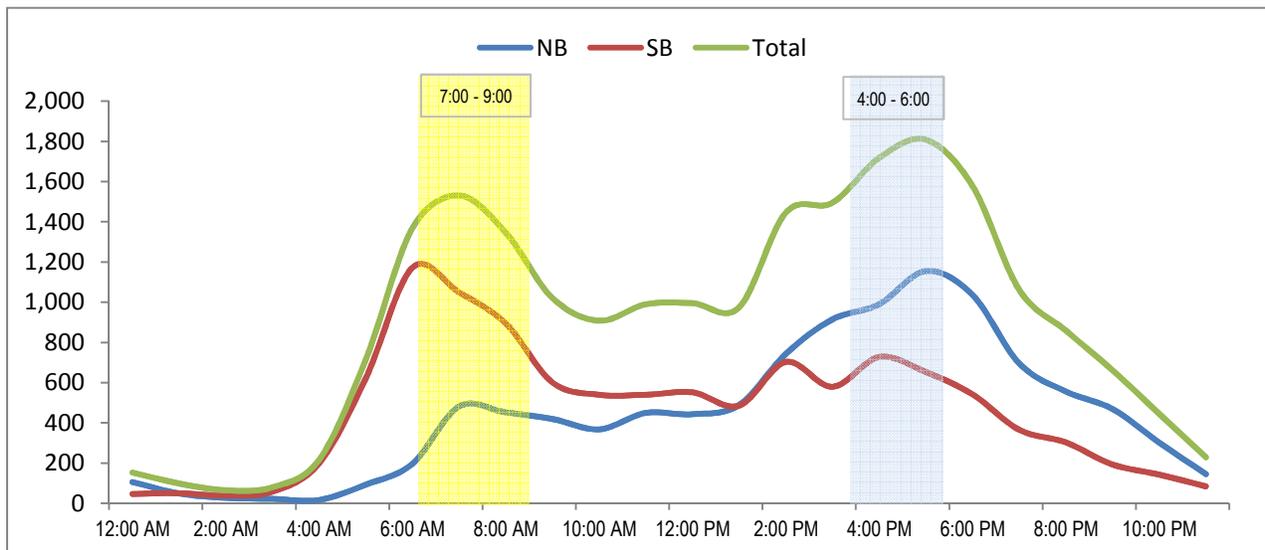
**Analysts:** DASH

**Weather:** Sunny

**AVC Proj. No:** 14-0168

24 Hour Segment Volume					21,766			
Time	Hourly Volume			Total	Time	Hourly Volume		
	NB	SB	Total			NB	SB	Total
12:00 AM - 1:00 AM	106	47	153	12:00 PM - 1:00 PM	443	552	995	
1:00 AM - 2:00 AM	49	50	99	1:00 PM - 2:00 PM	489	486	975	
2:00 AM - 3:00 AM	27	38	65	2:00 PM - 3:00 PM	743	703	1,446	
3:00 AM - 4:00 AM	22	58	80	3:00 PM - 4:00 PM	915	580	1,495	
4:00 AM - 5:00 AM	17	200	217	4:00 PM - 5:00 PM	990	728	1,718	
5:00 AM - 6:00 AM	93	622	715	5:00 PM - 6:00 PM	1,155	653	1,808	
6:00 AM - 7:00 AM	197	1,172	1,369	6:00 PM - 7:00 PM	1,036	542	1,578	
7:00 AM - 8:00 AM	482	1,049	1,531	7:00 PM - 8:00 PM	696	366	1,062	
8:00 AM - 9:00 AM	452	894	1,346	8:00 PM - 9:00 PM	556	303	859	
9:00 AM - 10:00 AM	420	601	1,021	9:00 PM - 10:00 PM	469	193	662	
10:00 AM - 11:00 AM	368	540	908	10:00 PM - 11:00 PM	302	143	445	
11:00 AM - 12:00 PM	450	540	990	11:00 PM - 12:00 AM	145	84	229	
<b>Total</b>	<b>2,683</b>	<b>5,811</b>	<b>8,494</b>	<b>Total</b>	<b>7,939</b>	<b>5,333</b>	<b>13,272</b>	

**24-Hour NB Volume 10,622      24-Hour SB Volume 11,144**



# 24 Hour Segment Count

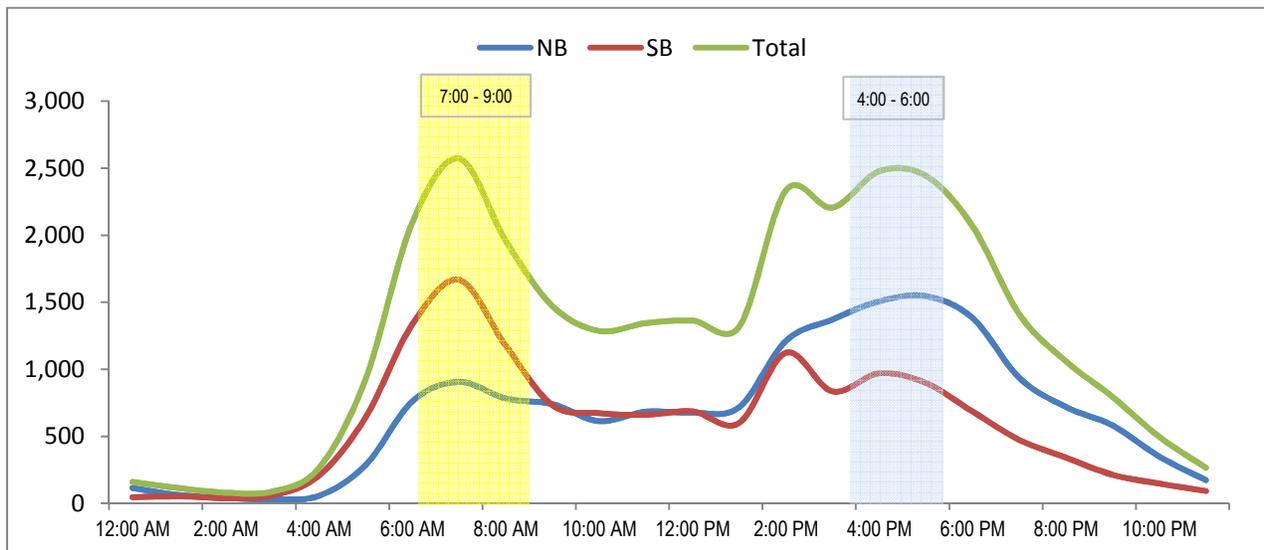
Accurate Video Counts Inc  
info@accuratevideocounts.com  
(619) 987-5136



**Location:** 4. Bear Valley Parkway btw Royal Crest Dr to Old Spanish Trail  
**Orientation:** North-South  
**Date of Count:** Wednesday, February 26, 2014  
**Analysts:** DASH  
**Weather:** Sunny  
**AVC Proj. No:** 14-0168

24 Hour Segment Volume					30,600			
Time	Hourly Volume			Time	Hourly Volume			
	NB	SB	Total		NB	SB	Total	
12:00 AM - 1:00 AM	115	45	160	12:00 PM - 1:00 PM	677	686	1,363	
1:00 AM - 2:00 AM	62	52	114	1:00 PM - 2:00 PM	717	600	1,317	
2:00 AM - 3:00 AM	41	39	80	2:00 PM - 3:00 PM	1,211	1,123	2,334	
3:00 AM - 4:00 AM	30	58	88	3:00 PM - 4:00 PM	1,371	835	2,206	
4:00 AM - 5:00 AM	57	208	265	4:00 PM - 5:00 PM	1,507	970	2,477	
5:00 AM - 6:00 AM	287	644	931	5:00 PM - 6:00 PM	1,545	898	2,443	
6:00 AM - 7:00 AM	762	1,336	2,098	6:00 PM - 7:00 PM	1,383	685	2,068	
7:00 AM - 8:00 AM	905	1,666	2,571	7:00 PM - 8:00 PM	937	474	1,411	
8:00 AM - 9:00 AM	782	1,176	1,958	8:00 PM - 9:00 PM	719	341	1,060	
9:00 AM - 10:00 AM	740	731	1,471	9:00 PM - 10:00 PM	581	213	794	
10:00 AM - 11:00 AM	613	673	1,286	10:00 PM - 11:00 PM	349	147	496	
11:00 AM - 12:00 PM	684	660	1,344	11:00 PM - 12:00 AM	173	92	265	
<b>Total</b>	<b>5,078</b>	<b>7,288</b>	<b>12,366</b>	<b>Total</b>	<b>11,170</b>	<b>7,064</b>	<b>18,234</b>	

**24-Hour NB Volume 16,248**      **24-Hour SB Volume 14,352**



# 24 Hour Segment Count

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



**Location:** 5. Bear Valley Parkway btw Mary Ln to Alamo Ln

**Orientation:** North-South

**Date of Count:** Wednesday, February 26, 2014

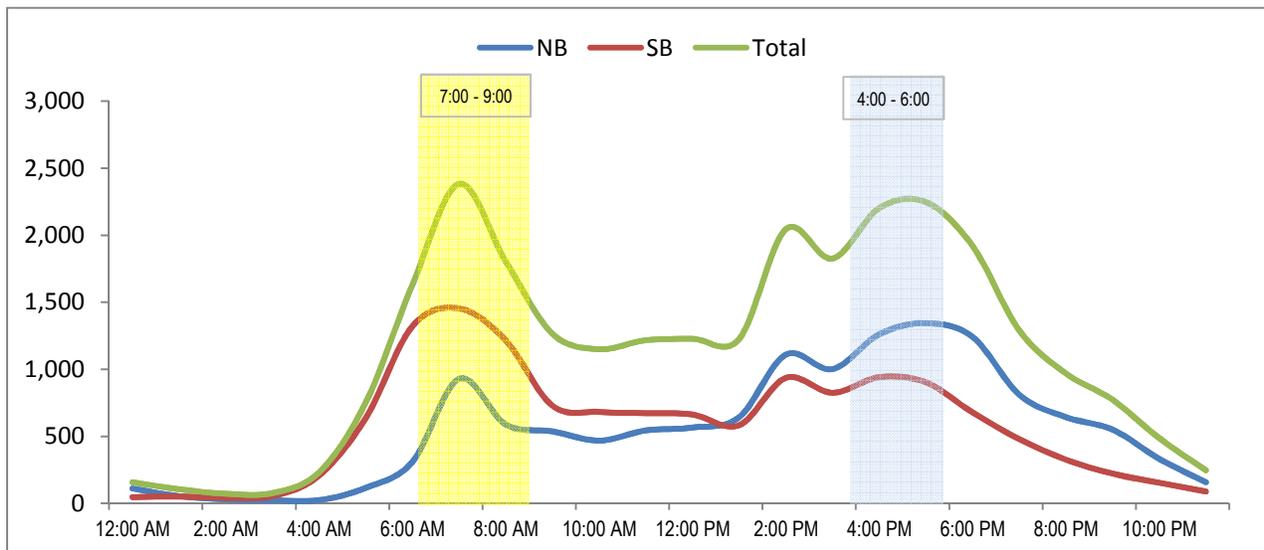
**Analysts:** DASH

**Weather:** Sunny

**AVC Proj. No:** 14-0168

24 Hour Segment Volume					27,301		
Time	Hourly Volume			Time	Hourly Volume		
	NB	SB	Total		NB	SB	Total
12:00 AM - 1:00 AM	111	46	157	12:00 PM - 1:00 PM	565	662	1,227
1:00 AM - 2:00 AM	54	51	105	1:00 PM - 2:00 PM	643	583	1,226
2:00 AM - 3:00 AM	30	42	72	2:00 PM - 3:00 PM	1,109	936	2,045
3:00 AM - 4:00 AM	23	54	77	3:00 PM - 4:00 PM	1,001	825	1,826
4:00 AM - 5:00 AM	24	208	232	4:00 PM - 5:00 PM	1,261	941	2,202
5:00 AM - 6:00 AM	116	637	753	5:00 PM - 6:00 PM	1,344	903	2,247
6:00 AM - 7:00 AM	310	1,321	1,631	6:00 PM - 7:00 PM	1,242	678	1,920
7:00 AM - 8:00 AM	929	1,454	2,383	7:00 PM - 8:00 PM	811	479	1,290
8:00 AM - 9:00 AM	588	1,215	1,803	8:00 PM - 9:00 PM	643	326	969
9:00 AM - 10:00 AM	537	728	1,265	9:00 PM - 10:00 PM	550	222	772
10:00 AM - 11:00 AM	468	682	1,150	10:00 PM - 11:00 PM	332	154	486
11:00 AM - 12:00 PM	544	673	1,217	11:00 PM - 12:00 AM	158	88	246
<b>Total</b>	<b>3,734</b>	<b>7,111</b>	<b>10,845</b>	<b>Total</b>	<b>9,659</b>	<b>6,797</b>	<b>16,456</b>

**24-Hour NB Volume 13,393**      **24-Hour SB Volume 13,908**





# 24 Hour Segment Count

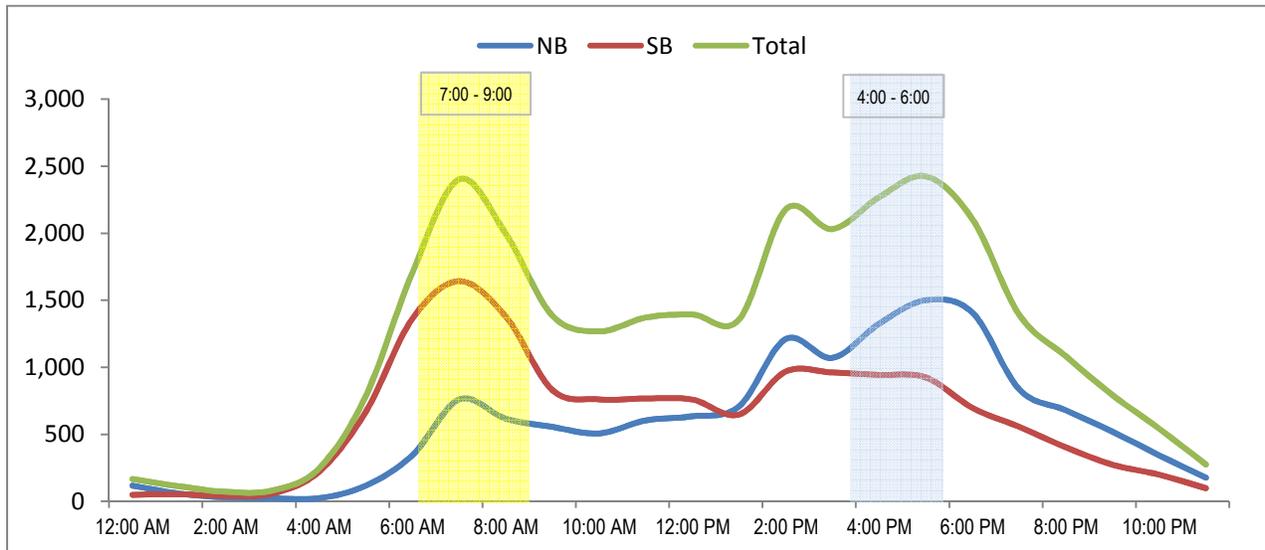
Accurate Video Counts Inc  
 info@accuratevideocounts.com  
 (619) 987-5136



**Location:** 6. Bear Valley Parkway btw San Pasqual Rd to Mary Ln  
**Orientation:** North-South  
**Date of Count:** Wednesday, February 26, 2014  
**Analysts:** DASH  
**Weather:** Sunny  
**AVC Proj. No:** 14-0168

24 Hour Segment Volume					29,428			
Time	Hourly Volume			Total	Time	Hourly Volume		
	NB	SB	Total			NB	SB	Total
12:00 AM - 1:00 AM	117	49	166	12:00 PM - 1:00 PM	634	759	1,393	
1:00 AM - 2:00 AM	58	54	112	1:00 PM - 2:00 PM	709	648	1,357	
2:00 AM - 3:00 AM	30	41	71	2:00 PM - 3:00 PM	1,211	968	2,179	
3:00 AM - 4:00 AM	23	58	81	3:00 PM - 4:00 PM	1,070	961	2,031	
4:00 AM - 5:00 AM	24	222	246	4:00 PM - 5:00 PM	1,326	943	2,269	
5:00 AM - 6:00 AM	117	668	785	5:00 PM - 6:00 PM	1,500	924	2,424	
6:00 AM - 7:00 AM	344	1,363	1,707	6:00 PM - 7:00 PM	1,407	697	2,104	
7:00 AM - 8:00 AM	760	1,642	2,402	7:00 PM - 8:00 PM	836	556	1,392	
8:00 AM - 9:00 AM	617	1,378	1,995	8:00 PM - 9:00 PM	679	403	1,082	
9:00 AM - 10:00 AM	555	829	1,384	9:00 PM - 10:00 PM	519	273	792	
10:00 AM - 11:00 AM	507	761	1,268	10:00 PM - 11:00 PM	343	199	542	
11:00 AM - 12:00 PM	604	767	1,371	11:00 PM - 12:00 AM	177	98	275	
<b>Total</b>	<b>3,756</b>	<b>7,832</b>	<b>11,588</b>	<b>Total</b>	<b>10,411</b>	<b>7,429</b>	<b>17,840</b>	

**24-Hour NB Volume 14,167**      **24-Hour SB Volume 15,261**



# 24 Hour Segment Count

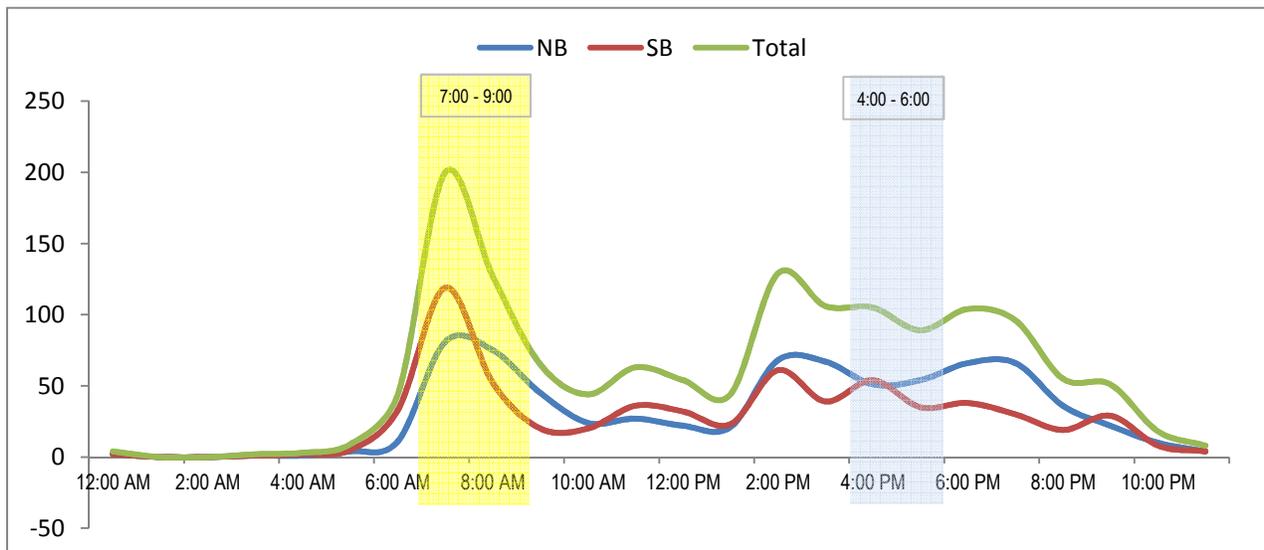
Accurate Video Counts Inc  
info@accuratevideocounts.com  
(619) 987-5136



**Location:** 7. Encino Drive btw Rancho Verde Drive to Amparo Drive  
**Orientation:** North-South  
**Date of Count:** Wednesday, February 26, 2014  
**Analysts:** DASH  
**Weather:** Sunny  
**AVC Proj. No:** 14-0168

24 Hour Segment Volume					1,420				
Time	Hourly Volume			Time	Hourly Volume				
	NB	SB	Total		NB	SB	Total		
12:00 AM - 1:00 AM	2	2	4	12:00 PM - 1:00 PM	22	32	54		
1:00 AM - 2:00 AM	0	0	0	1:00 PM - 2:00 PM	21	23	44		
2:00 AM - 3:00 AM	0	0	0	2:00 PM - 3:00 PM	68	61	129		
3:00 AM - 4:00 AM	1	1	2	3:00 PM - 4:00 PM	67	39	106		
4:00 AM - 5:00 AM	1	2	3	4:00 PM - 5:00 PM	51	54	105		
5:00 AM - 6:00 AM	4	5	9	5:00 PM - 6:00 PM	54	35	89		
6:00 AM - 7:00 AM	11	33	44	6:00 PM - 7:00 PM	66	38	104		
7:00 AM - 8:00 AM	81	119	200	7:00 PM - 8:00 PM	66	30	96		
8:00 AM - 9:00 AM	75	52	127	8:00 PM - 9:00 PM	36	19	55		
9:00 AM - 10:00 AM	45	20	65	9:00 PM - 10:00 PM	22	29	51		
10:00 AM - 11:00 AM	24	20	44	10:00 PM - 11:00 PM	10	8	18		
11:00 AM - 12:00 PM	27	36	63	11:00 PM - 12:00 AM	4	4	8		
<b>Total</b>	<b>271</b>	<b>290</b>	<b>561</b>	<b>Total</b>	<b>487</b>	<b>372</b>	<b>859</b>		

**24-Hour NB Volume 758**      **24-Hour SB Volume 662**



# 24 Hour Segment Count

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



**Location:** 8. Sunset Drive btw Bear Valley Parkway to Reill View Dr

**Orientation:** East-West

**Date of Count:** Wednesday, February 26, 2014

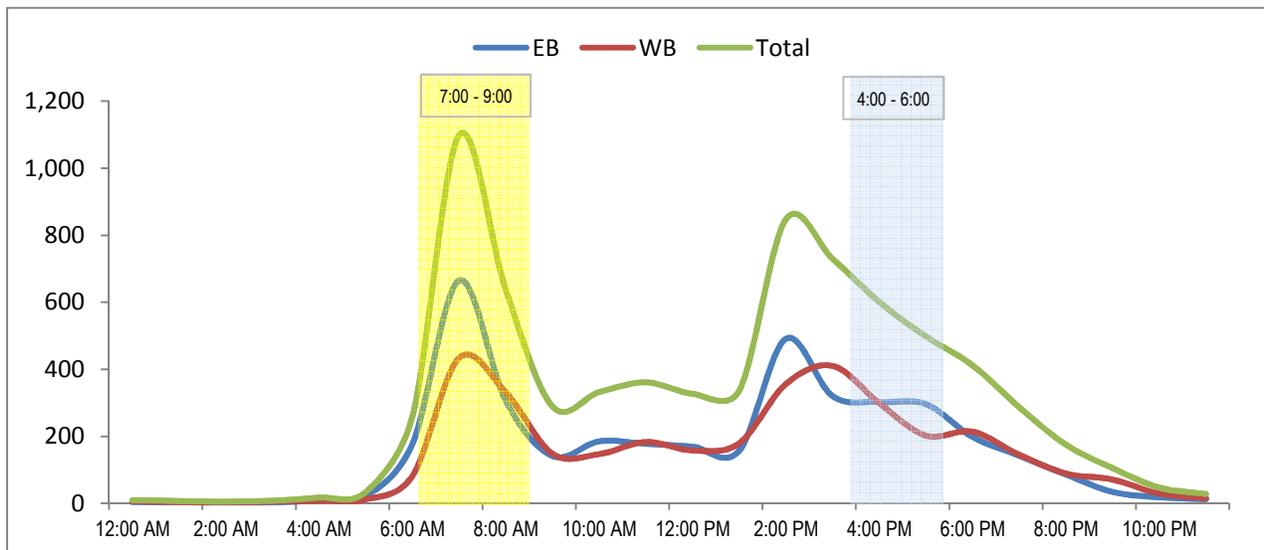
**Analysts:** DASH

**Weather:** Sunny

**AVC Proj. No:** 14-0168

24 Hour Segment Volume					7,452			
Time	Hourly Volume			Time	Hourly Volume			
	EB	WB	Total		EB	WB	Total	
12:00 AM - 1:00 AM	4	6	10	12:00 PM - 1:00 PM	169	158	327	
1:00 AM - 2:00 AM	3	4	7	1:00 PM - 2:00 PM	157	179	336	
2:00 AM - 3:00 AM	2	3	5	2:00 PM - 3:00 PM	491	356	847	
3:00 AM - 4:00 AM	3	5	8	3:00 PM - 4:00 PM	320	410	730	
4:00 AM - 5:00 AM	9	8	17	4:00 PM - 5:00 PM	302	299	601	
5:00 AM - 6:00 AM	22	12	34	5:00 PM - 6:00 PM	296	202	498	
6:00 AM - 7:00 AM	178	82	260	6:00 PM - 7:00 PM	198	214	412	
7:00 AM - 8:00 AM	665	434	1,099	7:00 PM - 8:00 PM	142	145	287	
8:00 AM - 9:00 AM	306	331	637	8:00 PM - 9:00 PM	86	89	175	
9:00 AM - 10:00 AM	141	148	289	9:00 PM - 10:00 PM	34	71	105	
10:00 AM - 11:00 AM	185	147	332	10:00 PM - 11:00 PM	18	29	47	
11:00 AM - 12:00 PM	178	183	361	11:00 PM - 12:00 AM	13	15	28	
<b>Total</b>	<b>1,696</b>	<b>1,363</b>	<b>3,059</b>	<b>Total</b>	<b>2,226</b>	<b>2,167</b>	<b>4,393</b>	

**24-Hour EB Volume 3,922**      **24-Hour WB Volume 3,530**



## APPENDIX B

### PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS

This Page Left Blank Intentionally

## 2010 HIGHWAY CAPACITY MANUAL LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

In the 2010 Highway Capacity Manual (HCM), Level of Service for signalized intersections is defined in terms of delay. Delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. Specifically, Level of Service criteria are stated in terms of the average control delay per vehicle for a 15-minute analysis period. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay.

Delay is a complex measure, and is dependent on a number of variables, including the quality of progression, the cycle length, the green ratio, and the v/c ratio for the lane group or approach in question.

LEVEL OF SERVICE	CONTROLLED DELAY PER VEHICLE (SEC)		
A		≤	10.0
B	10.1	to	20.0
C	20.1	to	35.0
D	35.1	to	55.0
E	55.1	to	80.0
F		>	80.0

Level of Service A describes operations with very low delay, (i.e. less than 10.0 seconds per vehicle). This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.

Level of Service B describes operations with delay in the range of 10.1 to 20.0 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.

Level of Service C describes operations with delay in the range of 20.1 to 35.0 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear in the level. The number of vehicles stopping is significant at this level, although many still pass through the intersections without stopping.

Level of Service D describes operations with delay in the range of 35.1 to 55.0 seconds per vehicle. At Level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

Level of Service E describes operations with delay in the range of 55.1 to 80.0 seconds per vehicle. This is considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.

Level of Service F describes operations with delay in excess of 80.0 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with over-saturation (i.e. when arrival flow rates exceed the capacity of the intersection). It may also occur at high v/c ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

## 2010 HIGHWAY CAPACITY MANUAL LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

In the 2010 Highway Capacity Manual (HCM), Level of Service for unsignalized intersections is determined by the computed or measured control delay and is defined for each minor movement. Level of Service is not defined for the intersection as a whole. Delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. The criteria are given in the following table, and are based on the average control delay for any particular minor movement.

LEVEL OF SERVICE	AVERAGE CONTROL DELAY SEC/VEH			EXPECTED DELAY TO MINOR STREET TRAFFIC
A	0.0	≤	10.0	Little or no delay
B	10.1	to	15.0	Short traffic delays
C	15.1	to	25.0	Average traffic delays
D	25.1	to	35.0	Long traffic delays
E	35.1	to	50.0	Very long traffic delays
F		>	50.0	Severe congestion

Level of Service F exists when there are insufficient gaps of suitable size to allow a side street demand to safely cross through a major street traffic stream. This Level of Service is generally evident from extremely long control delays experienced by side-street traffic and by queuing on the minor-street approaches. The method, however, is based on a constant critical gap size; that is, the critical gap remains constant no matter how long the side-street motorist waits. LOS F may also appear in the form on side-street vehicles selecting smaller-than-usual gaps. In such cases, safety may be a problem, and some disruption to the major traffic stream may result. It is important to note that LOS F may not always result in long queues but may result in adjustments to normal gap acceptance behavior, which are more difficult to observe in the field than queuing.

In most cases at Two-Way Stop Controlled (TWSC) intersections, the critical movement is the minor-street left-turn movement. As such, the minor-street left-turn movement can generally be considered the primary factor affecting overall intersection performance. The lower threshold for LOS F is set at 50 seconds of delay per vehicle. There are many instances, particularly in urban areas, in which the delay equations will predict delays of 50 seconds (LOS F) or more for minor-street movements under very low volume conditions on the minor street (less than 25 vehicle/hour). Since the first term of the equation is a function only of the capacity, the LOS F threshold of 50 sec/vehicle is reached with a movement capacity of approximately 85 vehicle/hour or less.

This procedure assumes random arrivals on the major street. For a typical four-lane arterial with average daily traffic volumes in the range of 15,000 to 20,000 vehicles per day (peak hour, 1,500 to 2,000 vehicle/hour), the delay equation used in the TWSC capacity analysis procedure will predict 50 seconds of delay or more (LOS F) for many urban TWSC intersections that allow minor-street left-turn movements. **The LOS F threshold will be reached regardless of the volume of minor-street left-turn traffic.** Notwithstanding this fact, most low-volume minor-street approaches would not meet any of the volume or delay warrants for signalization of the *Manual on Uniform Traffic Control Devices* (MUTCD) since the warrants define an asymptote at 100 vehicle/hour on the minor approach. As a result, many public agencies that use the HCM Level of Service thresholds to determine the design adequacy of TWSC intersections may be forced to eliminate the minor-street left-turn movement, even when the movement may not present any operational problem, such as the formation of long queues on the minor street or driveway approach.

HCM 2010 Signalized Intersection Summary  
 1: Bear Valley Parkway & San Pasqual Valley Rd (SR 78)

Existing AM  
 3/18/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	18	358	126	154	508	82	104	323	99	84	659	18
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	19	381	134	181	598	96	114	355	109	98	766	21
Adj No. of Lanes	1	2	1	1	2	0	2	2	0	1	2	0
Peak Hour Factor	0.94	0.94	0.94	0.85	0.85	0.85	0.91	0.91	0.91	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	65	977	437	212	1097	176	346	775	235	159	978	27
Arrive On Green	0.04	0.28	0.28	0.12	0.36	0.36	0.10	0.29	0.29	0.09	0.28	0.28
Sat Flow, veh/h	1774	3539	1583	1774	3056	490	3442	2678	811	1774	3519	96
Grp Volume(v), veh/h	19	381	134	181	346	348	114	233	231	98	385	402
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1776	1721	1770	1720	1774	1770	1846
Q Serve(g_s), s	1.1	9.2	7.1	10.5	16.4	16.5	3.2	11.3	11.6	5.6	21.2	21.2
Cycle Q Clear(g_c), s	1.1	9.2	7.1	10.5	16.4	16.5	3.2	11.3	11.6	5.6	21.2	21.2
Prop In Lane	1.00		1.00	1.00		0.28	1.00		0.47	1.00		0.05
Lane Grp Cap(c), veh/h	65	977	437	212	635	638	346	512	497	159	492	513
V/C Ratio(X)	0.29	0.39	0.31	0.86	0.54	0.55	0.33	0.45	0.46	0.62	0.78	0.78
Avail Cap(c_a), veh/h	152	977	437	283	635	638	359	512	497	212	492	513
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.5	30.9	30.2	45.5	26.9	26.9	44.1	30.7	30.8	46.2	35.1	35.1
Incr Delay (d2), s/veh	0.9	1.2	1.8	14.0	3.3	3.3	0.2	2.9	3.1	1.5	11.8	11.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	4.7	3.3	6.0	8.6	8.6	1.6	6.0	6.0	2.8	11.9	12.4
LnGrp Delay(d),s/veh	50.4	32.1	32.0	59.5	30.2	30.3	44.3	33.6	33.9	47.7	46.9	46.4
LnGrp LOS	D	C	C	E	C	C	D	C	C	D	D	D
Approach Vol, veh/h		534			875			578			885	
Approach Delay, s/veh		32.7			36.3			35.8			46.8	
Approach LOS		C			D			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.8	35.8	15.8	36.0	9.0	44.5	14.6	37.2				
Change Period (Y+Rc), s	* 5.2	6.7	* 5.2	6.7	* 5.2	6.7	* 5.2	6.7				
Max Green Setting (Gmax), s	* 17	29.1	* 11	29.3	* 9	36.9	* 13	27.7				
Max Q Clear Time (g_c+I1), s	12.5	11.2	5.2	23.2	3.1	18.5	7.6	13.6				
Green Ext Time (p_c), s	0.1	12.7	0.1	5.1	0.0	12.9	0.0	10.7				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			38.8									
HCM 2010 LOS			D									
<b>Notes</b>												
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.												

**Intersection**

Int Delay, s/veh 0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	2	9	3	493	895	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	30	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	10	3	536	973	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1515	973	973
Stage 1	973	-	-
Stage 2	542	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	132	306	709
Stage 1	366	-	-
Stage 2	583	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	131	306	709
Mov Cap-2 Maneuver	260	-	-
Stage 1	366	-	-
Stage 2	581	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.7	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	709	-	296	-	-
HCM Lane V/C Ratio	0.005	-	0.04	-	-
HCM Control Delay (s)	10.1	-	17.7	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

**Intersection**

Int Delay, s/veh 3.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	2	101	90	494	892	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Stop
Storage Length	110	0	130	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	63	63	91	91	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	160	99	543	991	13

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1732	991	991
Stage 1	991	-	-
Stage 2	741	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	97	299	698
Stage 1	359	-	-
Stage 2	471	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	83	299	698
Mov Cap-2 Maneuver	83	-	-
Stage 1	359	-	-
Stage 2	404	-	-

Approach	EB	NB	SB
HCM Control Delay, s	30.5	1.7	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	698	-	83	299	-	-
HCM Lane V/C Ratio	0.142	-	0.038	0.536	-	-
HCM Control Delay (s)	11	-	50.1	30.1	-	-
HCM Lane LOS	B	-	F	D	-	-
HCM 95th %tile Q(veh)	0.5	-	0.1	3	-	-

HCM 2010 Signalized Intersection Summary  
4: Bear Valley Parkway & Sunset Drive

Existing AM  
3/18/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	12	4	674	13	33	17	398	575	4	3	1023	7
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	14	5	784	21	52	27	428	618	4	3	1088	7
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	2	0
Peak Hour Factor	0.86	0.86	0.86	0.63	0.63	0.63	0.93	0.93	0.93	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	423	3	472	72	347	180	444	1074	913	6	1190	8
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.25	0.58	0.58	0.00	0.33	0.33
Sat Flow, veh/h	1314	10	1575	684	1156	600	1774	1863	1583	1774	3605	23
Grp Volume(v), veh/h	14	0	789	21	0	79	428	618	4	3	534	561
Grp Sat Flow(s),veh/h/ln	1314	0	1585	684	0	1757	1774	1863	1583	1774	1770	1859
Q Serve(g_s), s	0.8	0.0	30.0	0.0	0.0	3.3	23.8	21.0	0.1	0.2	29.0	29.0
Cycle Q Clear(g_c), s	4.1	0.0	30.0	30.0	0.0	3.3	23.8	21.0	0.1	0.2	29.0	29.0
Prop In Lane	1.00		0.99	1.00		0.34	1.00		1.00	1.00		0.01
Lane Grp Cap(c), veh/h	423	0	475	72	0	527	444	1074	913	6	584	613
V/C Ratio(X)	0.03	0.00	1.66	0.29	0.00	0.15	0.97	0.58	0.00	0.53	0.91	0.91
Avail Cap(c_a), veh/h	423	0	475	72	0	527	444	1074	913	71	584	613
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.2	0.0	35.0	50.0	0.0	25.7	37.1	13.4	9.0	49.8	32.1	32.1
Incr Delay (d2), s/veh	0.0	0.0	306.0	2.2	0.0	0.1	33.7	2.2	0.0	60.0	21.2	20.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	53.5	0.6	0.0	1.6	15.8	11.3	0.0	0.2	17.5	18.3
LnGrp Delay(d),s/veh	27.2	0.0	341.0	52.2	0.0	25.8	70.8	15.6	9.0	109.7	53.4	52.6
LnGrp LOS	C		F	D		C	E	B	A	F	D	D
Approach Vol, veh/h		803			100			1050			1098	
Approach Delay, s/veh		335.5			31.3			38.1			53.2	
Approach LOS		F			C			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.3	61.7		34.0	29.0	37.0		34.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	4.0	54.0		30.0	25.0	33.0		30.0				
Max Q Clear Time (g_c+I1), s	2.2	23.0		32.0	25.8	31.0		32.0				
Green Ext Time (p_c), s	0.0	14.2		0.0	0.0	1.7		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			121.6									
HCM 2010 LOS			F									

HCM 2010 Signalized Intersection Summary  
5: Bear Valley Parkway & Las Palmas Ave

Existing AM  
3/18/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	219	17	139	29	10	5	140	795	16	5	1373	341
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	322	25	204	53	18	9	189	1074	22	6	1543	383
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.68	0.68	0.68	0.55	0.55	0.55	0.74	0.74	0.74	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	372	40	330	189	270	135	195	2284	47	11	1531	366
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.11	0.64	0.64	0.01	0.54	0.54
Sat Flow, veh/h	1378	176	1434	1147	1173	586	1774	3547	73	1774	2836	677
Grp Volume(v), veh/h	322	0	229	53	0	27	189	536	560	6	940	986
Grp Sat Flow(s),veh/h/ln	1378	0	1610	1147	0	1759	1774	1770	1850	1774	1770	1743
Q Serve(g_s), s	21.8	0.0	12.8	4.3	0.0	1.2	10.6	15.5	15.5	0.3	52.1	54.0
Cycle Q Clear(g_c), s	23.0	0.0	12.8	17.1	0.0	1.2	10.6	15.5	15.5	0.3	52.1	54.0
Prop In Lane	1.00		0.89	1.00		0.33	1.00		0.04	1.00		0.39
Lane Grp Cap(c), veh/h	372	0	370	189	0	405	195	1139	1191	11	956	941
V/C Ratio(X)	0.86	0.00	0.62	0.28	0.00	0.07	0.97	0.47	0.47	0.55	0.98	1.05
Avail Cap(c_a), veh/h	372	0	370	189	0	405	195	1139	1191	71	956	941
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.8	0.0	34.6	42.2	0.0	30.1	44.3	9.1	9.1	49.6	22.6	23.0
Incr Delay (d2), s/veh	18.6	0.0	3.1	0.8	0.0	0.1	55.1	1.4	1.3	37.0	25.4	42.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.8	0.0	6.0	1.4	0.0	0.6	8.2	7.9	8.2	0.3	31.8	36.8
LnGrp Delay(d),s/veh	58.5	0.0	37.7	43.0	0.0	30.2	99.5	10.5	10.4	86.6	47.9	65.6
LnGrp LOS	E		D	D		C	F	B	B	F	D	F
Approach Vol, veh/h		551			80			1285			1932	
Approach Delay, s/veh		49.8			38.7			23.6			57.1	
Approach LOS		D			D			C			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.6	68.4		27.0	15.0	58.0		27.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	4.0	61.0		23.0	11.0	54.0		23.0				
Max Q Clear Time (g_c+I1), s	2.3	17.5		25.0	12.6	56.0		19.1				
Green Ext Time (p_c), s	0.0	33.3		0.0	0.0	0.0		1.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			44.5									
HCM 2010 LOS			D									

HCM 2010 Signalized Intersection Summary  
 1: Bear Valley Parkway & San Pasqual Valley Rd (SR 78)

Existing PM  
 3/18/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	26	498	106	111	448	65	105	798	211	63	418	29
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	30	566	120	118	477	69	117	887	234	73	486	34
Adj No. of Lanes	1	2	1	1	2	0	2	2	0	1	2	0
Peak Hour Factor	0.88	0.88	0.88	0.94	0.94	0.94	0.90	0.90	0.90	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	88	911	408	159	925	133	339	974	257	146	1124	78
Arrive On Green	0.05	0.26	0.26	0.09	0.30	0.30	0.10	0.35	0.35	0.08	0.33	0.33
Sat Flow, veh/h	1774	3539	1583	1774	3106	447	3442	2773	731	1774	3357	234
Grp Volume(v), veh/h	30	566	120	118	271	275	117	566	555	73	256	264
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1784	1721	1770	1734	1774	1770	1821
Q Serve(g_s), s	1.8	15.3	6.6	7.0	13.8	13.9	3.4	33.0	33.1	4.3	12.2	12.2
Cycle Q Clear(g_c), s	1.8	15.3	6.6	7.0	13.8	13.9	3.4	33.0	33.1	4.3	12.2	12.2
Prop In Lane	1.00		1.00	1.00		0.25	1.00		0.42	1.00		0.13
Lane Grp Cap(c), veh/h	88	911	408	159	527	531	339	622	609	146	593	610
V/C Ratio(X)	0.34	0.62	0.29	0.74	0.51	0.52	0.35	0.91	0.91	0.50	0.43	0.43
Avail Cap(c_a), veh/h	147	911	408	180	527	531	349	622	609	164	593	610
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.8	35.6	32.3	48.1	31.6	31.6	45.6	33.5	33.5	47.6	28.0	28.0
Incr Delay (d2), s/veh	0.9	3.2	1.8	10.9	3.6	3.6	0.2	19.7	20.2	1.0	2.3	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	7.9	3.1	3.9	7.2	7.3	1.7	19.6	19.3	2.1	6.3	6.5
LnGrp Delay(d),s/veh	50.7	38.8	34.2	59.0	35.1	35.2	45.8	53.2	53.7	48.6	30.3	30.3
LnGrp LOS	D	D	C	E	D	D	D	D	D	D	C	C
Approach Vol, veh/h		716			664			1238			593	
Approach Delay, s/veh		38.5			39.4			52.7			32.5	
Approach LOS		D			D			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.9	34.6	15.9	43.0	10.6	39.0	14.1	44.8				
Change Period (Y+Rc), s	* 5.2	6.7	* 5.2	6.7	* 5.2	6.7	* 5.2	6.7				
Max Green Setting (Gmax), s	* 11	27.9	* 11	36.3	* 9	29.9	* 10	37.3				
Max Q Clear Time (g_c+I1), s	9.0	17.3	5.4	14.2	3.8	15.9	6.3	35.1				
Green Ext Time (p_c), s	0.0	8.3	0.1	18.6	0.0	10.5	0.0	2.1				

Intersection Summary												
HCM 2010 Ctrl Delay			43.1									
HCM 2010 LOS			D									

Notes

\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

**Intersection**

Int Delay, s/veh 0

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	1	3	6	1106	626	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	30	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1	3	7	1202	680	1

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1896	681	682
Stage 1	681	-	-
Stage 2	1215	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	76	450	911
Stage 1	503	-	-
Stage 2	281	-	-
Platoon blocked, %			
Mov Cap-1 Maneuver	75	450	911
Mov Cap-2 Maneuver	195	-	-
Stage 1	503	-	-
Stage 2	279	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.8	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	911	-	339	-	-
HCM Lane V/C Ratio	0.007	-	0.013	-	-
HCM Control Delay (s)	9	-	15.8	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

**Intersection**

Int Delay, s/veh 1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	4	35	69	1108	624	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Stop
Storage Length	110	0	130	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	57	57	95	95	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	61	73	1166	693	6

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	2005	693	693
Stage 1	693	-	-
Stage 2	1312	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	65	443	902
Stage 1	496	-	-
Stage 2	252	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	60	443	902
Mov Cap-2 Maneuver	60	-	-
Stage 1	496	-	-
Stage 2	232	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.4	0.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	902	-	60	443	-	-
HCM Lane V/C Ratio	0.081	-	0.117	0.139	-	-
HCM Control Delay (s)	9.3	-	72.8	14.4	-	-
HCM Lane LOS	A	-	F	B	-	-
HCM 95th %tile Q(veh)	0.3	-	0.4	0.5	-	-

HCM 2010 Signalized Intersection Summary  
4: Bear Valley Parkway & Sunset Drive

Existing PM  
3/18/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	12	25	280	4	23	18	195	1150	4	4	654	11
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	13	27	301	5	29	22	203	1198	4	5	760	13
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.80	0.80	0.80	0.96	0.96	0.96	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	264	22	244	75	163	124	239	1313	1116	9	2047	35
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.13	0.70	0.70	0.01	0.57	0.57
Sat Flow, veh/h	1348	132	1471	1048	984	747	1774	1863	1583	1774	3561	61
Grp Volume(v), veh/h	13	0	328	5	0	51	203	1198	4	5	378	395
Grp Sat Flow(s),veh/h/ln	1348	0	1603	1048	0	1731	1774	1863	1583	1774	1770	1852
Q Serve(g_s), s	0.8	0.0	16.0	0.0	0.0	2.4	10.8	51.4	0.1	0.3	11.1	11.1
Cycle Q Clear(g_c), s	3.3	0.0	16.0	16.0	0.0	2.4	10.8	51.4	0.1	0.3	11.1	11.1
Prop In Lane	1.00		0.92	1.00		0.43	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	264	0	266	75	0	287	239	1313	1116	9	1017	1065
V/C Ratio(X)	0.05	0.00	1.23	0.07	0.00	0.18	0.85	0.91	0.00	0.54	0.37	0.37
Avail Cap(c_a), veh/h	264	0	266	75	0	287	368	1313	1116	74	1017	1065
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.0	0.0	40.3	48.3	0.0	34.6	40.8	11.8	4.2	47.9	11.1	11.1
Incr Delay (d2), s/veh	0.1	0.0	133.5	0.4	0.0	0.3	10.8	11.2	0.0	41.5	1.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	16.9	0.1	0.0	1.2	6.0	30.0	0.0	0.2	5.6	5.9
LnGrp Delay(d),s/veh	36.1	0.0	173.7	48.6	0.0	34.9	51.6	23.0	4.2	89.4	12.1	12.1
LnGrp LOS	D		F	D		C	D	C	A	F	B	B
Approach Vol, veh/h		341			56			1405			778	
Approach Delay, s/veh		168.5			36.1			27.0			12.6	
Approach LOS		F			D			C			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.5	72.0		20.0	17.0	59.5		20.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	4.0	68.0		16.0	20.0	52.0		16.0				
Max Q Clear Time (g_c+I1), s	2.3	53.4		18.0	12.8	13.1		18.0				
Green Ext Time (p_c), s	0.0	11.1		0.0	0.3	21.9		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			41.6									
HCM 2010 LOS			D									

HCM 2010 Signalized Intersection Summary  
5: Bear Valley Parkway & Las Palmas Ave

Existing PM  
3/18/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	49	3	23	17	0	1	21	1299	26	4	856	47
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	65	4	31	27	0	2	24	1460	29	4	941	52
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.75	0.75	0.75	0.64	0.64	0.64	0.89	0.89	0.89	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	193	13	101	164	0	112	37	2722	54	8	2558	141
Arrive On Green	0.07	0.07	0.07	0.07	0.00	0.07	0.02	0.77	0.77	0.00	0.75	0.75
Sat Flow, veh/h	1409	184	1427	1368	0	1583	1774	3549	70	1774	3411	188
Grp Volume(v), veh/h	65	0	35	27	0	2	24	727	762	4	488	505
Grp Sat Flow(s),veh/h/ln	1409	0	1611	1368	0	1583	1774	1770	1850	1774	1770	1829
Q Serve(g_s), s	3.4	0.0	1.6	1.5	0.0	0.1	1.0	12.4	12.4	0.2	7.2	7.2
Cycle Q Clear(g_c), s	3.5	0.0	1.6	3.0	0.0	0.1	1.0	12.4	12.4	0.2	7.2	7.2
Prop In Lane	1.00		0.89	1.00		1.00	1.00		0.04	1.00		0.10
Lane Grp Cap(c), veh/h	193	0	114	164	0	112	37	1357	1419	8	1327	1372
V/C Ratio(X)	0.34	0.00	0.31	0.16	0.00	0.02	0.65	0.54	0.54	0.53	0.37	0.37
Avail Cap(c_a), veh/h	390	0	339	355	0	333	117	1357	1419	93	1327	1372
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.5	0.0	33.5	35.0	0.0	32.8	36.9	3.5	3.5	37.8	3.3	3.3
Incr Delay (d2), s/veh	1.0	0.0	1.5	0.5	0.0	0.1	17.3	1.5	1.5	47.2	0.8	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.0	0.7	0.6	0.0	0.0	0.7	6.4	6.7	0.2	3.7	3.8
LnGrp Delay(d),s/veh	35.5	0.0	35.0	35.4	0.0	32.9	54.2	5.0	5.0	85.0	4.1	4.0
LnGrp LOS	D		D	D		C	D	A	A	F	A	A
Approach Vol, veh/h		100			29			1513			997	
Approach Delay, s/veh		35.3			35.2			5.8			4.4	
Approach LOS		D			D			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.3	62.3		9.4	5.6	61.0		9.4				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	4.0	58.0		16.0	5.0	57.0		16.0				
Max Q Clear Time (g_c+I1), s	2.2	14.4		5.5	3.0	9.2		5.0				
Green Ext Time (p_c), s	0.0	24.6		0.3	0.0	25.8		0.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			6.7									
HCM 2010 LOS			A									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	18	358	129	154	508	82	106	325	100	84	660	18
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	19	381	137	181	598	96	116	357	110	98	767	21
Adj No. of Lanes	1	2	1	1	2	0	2	2	0	1	2	0
Peak Hour Factor	0.94	0.94	0.94	0.85	0.85	0.85	0.91	0.91	0.91	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	65	977	437	212	1097	176	347	774	235	159	978	27
Arrive On Green	0.04	0.28	0.28	0.12	0.36	0.36	0.10	0.29	0.29	0.09	0.28	0.28
Sat Flow, veh/h	1774	3539	1583	1774	3056	490	3442	2676	813	1774	3519	96
Grp Volume(v), veh/h	19	381	137	181	346	348	116	234	233	98	386	402
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1776	1721	1770	1719	1774	1770	1846
Q Serve(g_s), s	1.1	9.2	7.2	10.5	16.4	16.5	3.3	11.4	11.7	5.6	21.2	21.2
Cycle Q Clear(g_c), s	1.1	9.2	7.2	10.5	16.4	16.5	3.3	11.4	11.7	5.6	21.2	21.2
Prop In Lane	1.00		1.00	1.00		0.28	1.00		0.47	1.00		0.05
Lane Grp Cap(c), veh/h	65	977	437	212	635	638	347	512	497	159	492	513
V/C Ratio(X)	0.29	0.39	0.31	0.86	0.54	0.55	0.33	0.46	0.47	0.62	0.78	0.78
Avail Cap(c_a), veh/h	151	977	437	283	635	638	359	512	497	212	492	513
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.5	31.0	30.2	45.5	26.9	26.9	44.1	30.7	30.8	46.2	35.1	35.1
Incr Delay (d2), s/veh	0.9	1.2	1.9	14.0	3.3	3.3	0.2	2.9	3.1	1.5	11.8	11.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.6	4.7	3.4	6.0	8.6	8.6	1.6	6.0	6.0	2.8	12.0	12.5
LnGrp Delay(d),s/veh	50.4	32.1	32.1	59.5	30.2	30.3	44.3	33.6	33.9	47.7	47.0	46.5
LnGrp LOS	D	C	C	E	C	C	D	C	C	D	D	D
Approach Vol, veh/h		537			875			583			886	
Approach Delay, s/veh		32.8			36.3			35.9			46.9	
Approach LOS		C			D			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	17.8	35.8	15.8	36.0	9.0	44.5	14.6	37.2				
Change Period (Y+Rc), s	* 5.2	6.7	* 5.2	6.7	* 5.2	6.7	* 5.2	6.7				
Max Green Setting (Gmax), s	* 17	29.1	* 11	29.3	* 9	36.9	* 13	27.7				
Max Q Clear Time (g_c+I1), s	12.5	11.2	5.3	23.2	3.1	18.5	7.6	13.7				
Green Ext Time (p_c), s	0.1	12.7	0.1	5.1	0.0	13.0	0.0	10.6				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			38.8									
HCM 2010 LOS			D									
<b>Notes</b>												
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.												



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↑	↗	↖	↖	↗
Volume (veh/h)	2	0	9	26	0	5	3	493	9	4	895	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	2	0	10	28	0	5	3	536	10	4	973	0
Adj No. of Lanes	0	1	0	0	1	0	1	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	187	0	61	331	0	10	422	1162	987	704	1162	0
Arrive On Green	0.04	0.00	0.04	0.04	0.00	0.04	0.62	0.62	0.62	0.62	0.62	0.00
Sat Flow, veh/h	283	0	1413	1253	0	224	576	1863	1583	857	1863	0
Grp Volume(v), veh/h	12	0	0	33	0	0	3	536	10	4	973	0
Grp Sat Flow(s),veh/h/ln1695	0	0	0	1477	0	0	576	1863	1583	857	1863	0
Q Serve(g_s), s	0.0	0.0	0.0	0.4	0.0	0.0	0.1	3.7	0.1	0.1	9.9	0.0
Cycle Q Clear(g_c), s	0.2	0.0	0.0	0.5	0.0	0.0	10.0	3.7	0.1	3.7	9.9	0.0
Prop In Lane	0.17		0.83	0.85		0.15	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	248	0	0	341	0	0	422	1162	987	704	1162	0
V/C Ratio(X)	0.05	0.00	0.00	0.10	0.00	0.00	0.01	0.46	0.01	0.01	0.84	0.00
Avail Cap(c_a), veh/h	1215	0	0	1229	0	0	447	1241	1055	741	1241	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	11.1	0.0	0.0	11.2	0.0	0.0	7.5	2.4	1.7	3.4	3.6	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.3	0.0	0.0	4.9	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.0	0.0	0.0	0.2	0.0	0.0	0.0	1.9	0.0	0.0	6.2	0.0
LnGrp Delay(d),s/veh	11.1	0.0	0.0	11.3	0.0	0.0	7.5	2.7	1.7	3.4	8.5	0.0
LnGrp LOS	B			B			A	A	A	A	A	
Approach Vol, veh/h		12			33			549			977	
Approach Delay, s/veh		11.1			11.3			2.7			8.5	
Approach LOS		B			B			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		19.0		5.0		19.0		5.0				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		16.0		16.0		16.0		16.0				
Max Q Clear Time (g_c+I1), s		12.0		2.2		11.9		2.5				
Green Ext Time (p_c), s		3.0		0.1		3.1		0.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				6.5								
HCM 2010 LOS				A								

**Intersection**

Int Delay, s/veh 3.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	3	101	90	502	906	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Stop
Storage Length	110	0	130	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	63	63	91	91	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	160	99	552	1007	27

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1756	1007	0
Stage 1	1007	-	-
Stage 2	749	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	93	292	688
Stage 1	353	-	-
Stage 2	467	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	80	292	688
Mov Cap-2 Maneuver	80	-	-
Stage 1	353	-	-
Stage 2	400	-	-

Approach	EB	NB	SB
HCM Control Delay, s	32	1.7	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	688	-	80	292	-	-
HCM Lane V/C Ratio	0.144	-	0.06	0.549	-	-
HCM Control Delay (s)	11.1	-	52.8	31.4	-	-
HCM Lane LOS	B	-	F	D	-	-
HCM 95th %tile Q(veh)	0.5	-	0.2	3.1	-	-

Existing + Proj AM  
4: Bear Valley Parkway & Sunset Drive

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	16	4	674	13	33	17	398	579	4	3	1034	10
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	19	5	784	21	52	27	428	623	4	3	1100	11
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	2	0
Peak Hour Factor	0.86	0.86	0.86	0.63	0.63	0.63	0.93	0.93	0.93	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	423	3	472	72	347	180	444	1074	913	6	1185	12
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.25	0.58	0.58	0.00	0.33	0.33
Sat Flow, veh/h	1314	10	1575	684	1156	600	1774	1863	1583	1774	3590	36
Grp Volume(v), veh/h	19	0	789	21	0	79	428	623	4	3	542	569
Grp Sat Flow(s),veh/h/ln	1314	0	1585	684	0	1757	1774	1863	1583	1774	1770	1856
Q Serve(g_s), s	1.1	0.0	30.0	0.0	0.0	3.3	23.8	21.3	0.1	0.2	29.6	29.6
Cycle Q Clear(g_c), s	4.4	0.0	30.0	30.0	0.0	3.3	23.8	21.3	0.1	0.2	29.6	29.6
Prop In Lane	1.00		0.99	1.00		0.34	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	423	0	475	72	0	527	444	1074	913	6	584	613
V/C Ratio(X)	0.04	0.00	1.66	0.29	0.00	0.15	0.97	0.58	0.00	0.53	0.93	0.93
Avail Cap(c_a), veh/h	423	0	475	72	0	527	444	1074	913	71	584	613
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.3	0.0	35.0	50.0	0.0	25.7	37.1	13.5	9.0	49.8	32.4	32.4
Incr Delay (d2), s/veh	0.0	0.0	306.0	2.2	0.0	0.1	33.7	2.3	0.0	60.0	23.2	22.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.4	0.0	53.5	0.6	0.0	1.6	15.8	11.6	0.0	0.2	18.2	19.0
LnGrp Delay(d),s/veh	27.3	0.0	341.0	52.2	0.0	25.8	70.8	15.7	9.0	109.7	55.6	54.8
LnGrp LOS	C		F	D		C	E	B	A	F	E	D
Approach Vol, veh/h		808			100			1055			1114	
Approach Delay, s/veh		333.6			31.3			38.0			55.3	
Approach LOS		F			C			D			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.3	61.7		34.0	29.0	37.0		34.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	4.0	54.0		30.0	25.0	33.0		30.0				
Max Q Clear Time (g_c+I1), s	2.2	23.3		32.0	25.8	31.6		32.0				
Green Ext Time (p_c), s	0.0	14.4		0.0	0.0	1.2		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			121.7									
HCM 2010 LOS			F									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↕		↖	↗	
Volume (veh/h)	220	17	139	29	10	5	140	798	16	5	1382	343
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	324	25	204	53	18	9	189	1078	22	6	1553	385
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.68	0.68	0.68	0.55	0.55	0.55	0.74	0.74	0.74	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	372	40	330	189	270	135	195	2284	47	11	1532	365
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.11	0.64	0.64	0.01	0.54	0.54
Sat Flow, veh/h	1378	176	1434	1147	1173	586	1774	3547	72	1774	2837	676
Grp Volume(v), veh/h	324	0	229	53	0	27	189	538	562	6	945	993
Grp Sat Flow(s),veh/h/ln	1378	0	1610	1147	0	1759	1774	1770	1850	1774	1770	1743
Q Serve(g_s), s	21.8	0.0	12.8	4.3	0.0	1.2	10.6	15.5	15.5	0.3	52.7	54.0
Cycle Q Clear(g_c), s	23.0	0.0	12.8	17.1	0.0	1.2	10.6	15.5	15.5	0.3	52.7	54.0
Prop In Lane	1.00		0.89	1.00		0.33	1.00		0.04	1.00		0.39
Lane Grp Cap(c), veh/h	372	0	370	189	0	405	195	1139	1191	11	956	941
V/C Ratio(X)	0.87	0.00	0.62	0.28	0.00	0.07	0.97	0.47	0.47	0.55	0.99	1.06
Avail Cap(c_a), veh/h	372	0	370	189	0	405	195	1139	1191	71	956	941
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	39.9	0.0	34.6	42.2	0.0	30.1	44.3	9.1	9.1	49.6	22.7	23.0
Incr Delay (d2), s/veh	19.4	0.0	3.1	0.8	0.0	0.1	55.1	1.4	1.3	37.0	26.5	45.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	10.9	0.0	6.0	1.4	0.0	0.6	8.2	7.9	8.3	0.3	32.5	37.4
LnGrp Delay(d),s/veh	59.3	0.0	37.7	43.0	0.0	30.2	99.5	10.5	10.5	86.6	49.2	68.0
LnGrp LOS	E		D	D		C	F	B	B	F	D	F
Approach Vol, veh/h		553			80			1289			1944	
Approach Delay, s/veh		50.3			38.7			23.5			58.9	
Approach LOS		D			D			C			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.6	68.4		27.0	15.0	58.0		27.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	1.0	61.0		23.0	11.0	54.0		23.0				
Max Q Clear Time (g_c+1), s	1.3	17.5		25.0	12.6	56.0		19.1				
Green Ext Time (p_c), s	0.0	33.5		0.0	0.0	0.0		1.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			45.5									
HCM 2010 LOS			D									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	26	498	114	112	448	65	106	799	211	63	420	29
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	30	566	130	119	477	69	118	888	234	73	488	34
Adj No. of Lanes	1	2	1	1	2	0	2	2	0	1	2	0
Peak Hour Factor	0.88	0.88	0.88	0.94	0.94	0.94	0.90	0.90	0.90	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	88	911	407	159	925	133	339	975	257	145	1124	78
Arrive On Green	0.05	0.26	0.26	0.09	0.30	0.30	0.10	0.35	0.35	0.08	0.33	0.33
Sat Flow, veh/h	1774	3539	1583	1774	3106	447	3442	2773	730	1774	3358	233
Grp Volume(v), veh/h	30	566	130	119	271	275	118	566	556	73	257	265
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1784	1721	1770	1734	1774	1770	1822
Q Serve(g_s), s	1.8	15.3	7.2	7.1	13.8	13.9	3.5	33.1	33.2	4.3	12.2	12.3
Cycle Q Clear(g_c), s	1.8	15.3	7.2	7.1	13.8	13.9	3.5	33.1	33.2	4.3	12.2	12.3
Prop In Lane	1.00		1.00	1.00		0.25	1.00		0.42	1.00		0.13
Lane Grp Cap(c), veh/h	88	911	407	159	527	531	339	622	609	145	593	610
V/C Ratio(X)	0.34	0.62	0.32	0.75	0.51	0.52	0.35	0.91	0.91	0.50	0.43	0.44
Avail Cap(c_a), veh/h	147	911	407	180	527	531	349	622	609	164	593	610
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	49.8	35.6	32.6	48.1	31.6	31.6	45.6	33.5	33.6	47.6	28.0	28.1
Incr Delay (d2), s/veh	0.9	3.2	2.1	11.5	3.6	3.6	0.2	19.8	20.3	1.0	2.3	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.9	7.9	3.4	4.0	7.2	7.3	1.7	19.6	19.3	2.1	6.4	6.6
LnGrp Delay(d),s/veh	50.7	38.8	34.6	59.6	35.1	35.2	45.8	53.3	53.8	48.6	30.3	30.3
LnGrp LOS	D	D	C	E	D	D	D	D	D	D	C	C
Approach Vol, veh/h		726			665			1240			595	
Approach Delay, s/veh		38.5			39.5			52.8			32.6	
Approach LOS		D			D			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	14.9	34.6	15.9	43.0	10.6	39.0	14.1	44.8				
Change Period (Y+Rc), s	* 5.2	6.7	* 5.2	6.7	* 5.2	6.7	* 5.2	6.7				
Max Green Setting (Gmax), s	* 11	27.9	* 11	36.3	* 9	29.9	* 10	37.3				
Max Q Clear Time (g_c+I1), s	9.1	17.3	5.5	14.3	3.8	15.9	6.3	35.2				
Green Ext Time (p_c), s	0.0	8.3	0.1	18.5	0.0	10.6	0.0	2.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			43.1									
HCM 2010 LOS			D									
<b>Notes</b>												
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.												



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕	↕	↑	↕	↕	↕	
Volume (veh/h)	1	0	3	14	0	2	6	1106	27	12	626	1
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1863	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	1	0	3	15	0	2	7	1202	29	13	680	1
Adj No. of Lanes	0	1	0	0	1	1	1	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	189	0	15	328	0	34	635	1215	1033	302	1213	2
Arrive On Green	0.02	0.00	0.02	0.02	0.00	0.02	0.65	0.65	0.65	0.65	0.65	0.65
Sat Flow, veh/h	237	0	710	1592	0	1583	756	1863	1583	451	1860	3
Grp Volume(v), veh/h	4	0	0	15	0	2	7	1202	29	13	0	681
Grp Sat Flow(s),veh/h/ln	947	0	0	1592	0	1583	756	1863	1583	451	0	1862
Q Serve(g_s), s	0.1	0.0	0.0	0.0	0.0	0.0	0.1	15.5	0.2	0.5	0.0	4.9
Cycle Q Clear(g_c), s	0.3	0.0	0.0	0.2	0.0	0.0	5.0	15.5	0.2	16.0	0.0	4.9
Prop In Lane	0.25		0.75	1.00		1.00	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	204	0	0	328	0	34	635	1215	1033	302	0	1215
V/C Ratio(X)	0.02	0.00	0.00	0.05	0.00	0.06	0.01	0.99	0.03	0.04	0.00	0.56
Avail Cap(c_a), veh/h	1172	0	0	1216	0	1033	635	1215	1033	302	0	1215
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	12.0	0.0	0.0	11.8	0.0	11.8	3.7	4.2	1.5	12.1	0.0	2.3
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.1	0.0	0.7	0.0	23.2	0.0	0.1	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.0	0.0	0.0	0.1	0.0	0.0	0.0	15.2	0.1	0.1	0.0	2.5
LnGrp Delay(d),s/veh	12.0	0.0	0.0	11.9	0.0	12.4	3.7	27.4	1.5	12.2	0.0	2.9
LnGrp LOS	B			B		B	A	C	A	B		A
Approach Vol, veh/h		4			17			1238			694	
Approach Delay, s/veh		12.0			12.0			26.6			3.1	
Approach LOS		B			B			C			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		20.0		4.5		20.0		4.5				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		16.0		16.0		16.0		16.0				
Max Q Clear Time (g_c+1), s		17.5		2.3		18.0		2.2				
Green Ext Time (p_c), s		0.0		0.0		0.0		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				18.1								
HCM 2010 LOS				B								

**Intersection**

Int Delay, s/veh 1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	6	35	69	1133	632	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Stop
Storage Length	110	0	130	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	57	57	95	95	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	61	73	1193	702	12

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	2040	702	0
Stage 1	702	-	-
Stage 2	1338	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	62	438	895
Stage 1	491	-	-
Stage 2	245	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	57	438	895
Mov Cap-2 Maneuver	57	-	-
Stage 1	491	-	-
Stage 2	225	-	-

Approach	EB	NB	SB
HCM Control Delay, s	24.4	0.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	895	-	57	438	-	-
HCM Lane V/C Ratio	0.081	-	0.185	0.14	-	-
HCM Control Delay (s)	9.4	-	81.9	14.6	-	-
HCM Lane LOS	A	-	F	B	-	-
HCM 95th %tile Q(veh)	0.3	-	0.6	0.5	-	-

Existing + Proj PM  
4: Bear Valley Parkway & Sunset Drive

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	23	25	280	4	23	18	195	1164	4	4	660	13
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	25	27	301	5	29	22	203	1212	4	5	767	15
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.80	0.80	0.80	0.96	0.96	0.96	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	264	22	244	75	163	124	239	1313	1116	9	2041	40
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.13	0.70	0.70	0.01	0.57	0.57
Sat Flow, veh/h	1348	132	1471	1048	984	747	1774	1863	1583	1774	3551	69
Grp Volume(v), veh/h	25	0	328	5	0	51	203	1212	4	5	382	400
Grp Sat Flow(s),veh/h/ln	1348	0	1603	1048	0	1731	1774	1863	1583	1774	1770	1850
Q Serve(g_s), s	1.6	0.0	16.0	0.0	0.0	2.4	10.8	53.1	0.1	0.3	11.3	11.3
Cycle Q Clear(g_c), s	4.0	0.0	16.0	16.0	0.0	2.4	10.8	53.1	0.1	0.3	11.3	11.3
Prop In Lane	1.00		0.92	1.00		0.43	1.00		1.00	1.00		0.04
Lane Grp Cap(c), veh/h	264	0	266	75	0	287	239	1313	1116	9	1017	1064
V/C Ratio(X)	0.09	0.00	1.23	0.07	0.00	0.18	0.85	0.92	0.00	0.54	0.38	0.38
Avail Cap(c_a), veh/h	264	0	266	75	0	287	368	1313	1116	74	1017	1064
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	36.3	0.0	40.3	48.3	0.0	34.6	40.8	12.0	4.2	47.9	11.1	11.1
Incr Delay (d2), s/veh	0.2	0.0	133.5	0.4	0.0	0.3	10.8	12.2	0.0	41.5	1.1	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.6	0.0	16.9	0.1	0.0	1.2	6.0	31.4	0.0	0.2	5.8	6.1
LnGrp Delay(d),s/veh	36.5	0.0	173.7	48.6	0.0	34.9	51.6	24.3	4.2	89.4	12.2	12.1
LnGrp LOS	D		F	D		C	D	C	A	F	B	B
Approach Vol, veh/h		353			56			1419			787	
Approach Delay, s/veh		164.0			36.1			28.1			12.7	
Approach LOS		F			D			C			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.5	72.0		20.0	17.0	59.5		20.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	4.0	68.0		16.0	20.0	52.0		16.0				
Max Q Clear Time (g_c+I1), s	2.3	55.1		18.0	12.8	13.3		18.0				
Green Ext Time (p_c), s	0.0	10.1		0.0	0.3	22.3		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			42.0									
HCM 2010 LOS			D									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↖	↗		↖	↗		↖	↕		↖	↗	
Volume (veh/h)	51	3	23	17	0	1	21	1311	26	4	861	48
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	68	4	31	27	0	2	24	1473	29	4	946	53
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.75	0.75	0.75	0.64	0.64	0.64	0.89	0.89	0.89	0.91	0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	196	13	105	167	0	116	37	2716	53	8	2550	143
Arrive On Green	0.07	0.07	0.07	0.07	0.00	0.07	0.02	0.76	0.76	0.00	0.75	0.75
Sat Flow, veh/h	1409	184	1427	1368	0	1583	1774	3550	70	1774	3408	191
Grp Volume(v), veh/h	68	0	35	27	0	2	24	733	769	4	491	508
Grp Sat Flow(s),veh/h/ln	1409	0	1611	1368	0	1583	1774	1770	1850	1774	1770	1829
Q Serve(g_s), s	3.6	0.0	1.6	1.5	0.0	0.1	1.0	12.7	12.7	0.2	7.4	7.4
Cycle Q Clear(g_c), s	3.7	0.0	1.6	3.0	0.0	0.1	1.0	12.7	12.7	0.2	7.4	7.4
Prop In Lane	1.00		0.89	1.00		1.00	1.00		0.04	1.00		0.10
Lane Grp Cap(c), veh/h	196	0	118	167	0	116	37	1354	1415	8	1324	1369
V/C Ratio(X)	0.35	0.00	0.30	0.16	0.00	0.02	0.65	0.54	0.54	0.53	0.37	0.37
Avail Cap(c_a), veh/h	389	0	338	354	0	333	116	1354	1415	93	1324	1369
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.5	0.0	33.4	34.9	0.0	32.8	37.0	3.6	3.6	37.8	3.3	3.3
Incr Delay (d2), s/veh	1.0	0.0	1.4	0.5	0.0	0.1	17.3	1.6	1.5	47.3	0.8	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.0	0.0	0.7	0.6	0.0	0.0	0.7	6.7	7.0	0.2	3.8	4.0
LnGrp Delay(d),s/veh	35.5	0.0	34.8	35.3	0.0	32.8	54.3	5.2	5.1	85.1	4.1	4.1
LnGrp LOS	D		C	D		C	D	A	A	F	A	A
Approach Vol, veh/h		103			29			1526			1003	
Approach Delay, s/veh		35.3			35.1			5.9			4.4	
Approach LOS		D			D			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.3	62.3		9.6	5.6	61.0		9.6				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	1.0	58.0		16.0	5.0	57.0		16.0				
Max Q Clear Time (g_c+1), s	1.0	14.7		5.7	3.0	9.4		5.0				
Green Ext Time (p_c), s	0.0	24.8		0.3	0.0	26.1		0.3				

Intersection Summary

HCM 2010 Ctrl Delay	6.8
HCM 2010 LOS	A

HCM 2010 Signalized Intersection Summary  
 1: Bear Valley Parkway & San Pasqual Valley Rd (SR 78)

Existing + CP AM  
 3/18/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	18	371	139	176	525	89	115	373	112	90	711	18
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	19	395	148	207	618	105	126	410	123	105	827	21
Adj No. of Lanes	1	2	1	1	2	0	2	2	0	1	2	0
Peak Hour Factor	0.94	0.94	0.94	0.85	0.85	0.85	0.91	0.91	0.91	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	64	960	430	237	1116	189	345	765	227	158	963	24
Arrive On Green	0.04	0.27	0.27	0.13	0.37	0.37	0.10	0.28	0.28	0.09	0.27	0.27
Sat Flow, veh/h	1774	3539	1583	1774	3028	514	3442	2692	799	1774	3527	90
Grp Volume(v), veh/h	19	395	148	207	361	362	126	268	265	105	415	433
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1772	1721	1770	1722	1774	1770	1847
Q Serve(g_s), s	1.1	9.8	8.1	12.3	17.3	17.4	3.7	13.7	14.0	6.1	23.9	23.9
Cycle Q Clear(g_c), s	1.1	9.8	8.1	12.3	17.3	17.4	3.7	13.7	14.0	6.1	23.9	23.9
Prop In Lane	1.00		1.00	1.00		0.29	1.00		0.46	1.00		0.05
Lane Grp Cap(c), veh/h	64	960	430	237	652	653	345	503	489	158	483	505
V/C Ratio(X)	0.30	0.41	0.34	0.87	0.55	0.55	0.37	0.53	0.54	0.66	0.86	0.86
Avail Cap(c_a), veh/h	149	960	430	278	652	653	353	503	489	208	483	505
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.3	32.1	31.4	45.6	26.9	26.9	45.1	32.4	32.5	47.3	37.0	37.0
Incr Delay (d2), s/veh	0.9	1.3	2.2	20.6	3.4	3.4	0.2	4.0	4.3	1.9	17.7	17.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	4.9	3.8	7.4	9.0	9.1	1.8	7.3	7.2	3.1	14.0	14.5
LnGrp Delay(d),s/veh	51.3	33.4	33.6	66.1	30.2	30.3	45.3	36.4	36.7	49.2	54.7	54.1
LnGrp LOS	D	C	C	E	C	C	D	D	D	D	D	D
Approach Vol, veh/h		562			930			659			953	
Approach Delay, s/veh		34.0			38.2			38.2			53.8	
Approach LOS		C			D			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	19.5	35.8	15.9	36.0	9.1	46.2	14.8	37.2				
Change Period (Y+Rc), s	* 5.2	6.7	* 5.2	6.7	* 5.2	6.7	* 5.2	6.7				
Max Green Setting (Gmax), s	* 17	29.1	* 11	29.3	* 9	36.9	* 13	27.7				
Max Q Clear Time (g_c+I1), s	14.3	11.8	5.7	25.9	3.1	19.4	8.1	16.0				
Green Ext Time (p_c), s	0.1	12.7	0.1	3.1	0.0	12.8	0.0	9.6				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			42.3									
HCM 2010 LOS			D									
<b>Notes</b>												
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.												

**Intersection**

Int Delay, s/veh 0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	3	9	4	565	983	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	30	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	3	10	4	614	1068	0

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1691	1068	0
Stage 1	1068	-	-
Stage 2	623	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	103	269	653
Stage 1	330	-	-
Stage 2	535	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	102	269	653
Mov Cap-2 Maneuver	229	-	-
Stage 1	330	-	-
Stage 2	532	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.7	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	653	-	258	-	-
HCM Lane V/C Ratio	0.007	-	0.051	-	-
HCM Control Delay (s)	10.6	-	19.7	-	-
HCM Lane LOS	B	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

**Intersection**

Int Delay, s/veh 6.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	3	133	111	566	975	17
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Stop
Storage Length	110	0	130	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	63	63	91	91	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	211	122	622	1083	19

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1949	1083	0
Stage 1	1083	-	-
Stage 2	866	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	71	264	644
Stage 1	325	-	-
Stage 2	412	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	58	264	644
Mov Cap-2 Maneuver	58	-	-
Stage 1	325	-	-
Stage 2	334	-	-

Approach	EB	NB	SB
HCM Control Delay, s	57.2	1.9	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	644	-	58	264	-	-
HCM Lane V/C Ratio	0.189	-	0.082	0.8	-	-
HCM Control Delay (s)	11.9	-	72.5	56.9	-	-
HCM Lane LOS	B	-	F	F	-	-
HCM 95th %tile Q(veh)	0.7	-	0.3	6.2	-	-

HCM 2010 Signalized Intersection Summary  
 4: Bear Valley Parkway & Sunset Drive

Existing + CP AM  
 3/18/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	14	6	705	18	46	26	415	667	6	5	1134	8
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	16	7	820	29	73	41	446	717	6	5	1206	9
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	2	0
Peak Hour Factor	0.86	0.86	0.86	0.63	0.63	0.63	0.93	0.93	0.93	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	392	4	472	72	336	189	444	1071	910	9	1188	9
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.25	0.57	0.57	0.01	0.33	0.33
Sat Flow, veh/h	1273	13	1572	660	1122	630	1774	1863	1583	1774	3601	27
Grp Volume(v), veh/h	16	0	827	29	0	114	446	717	6	5	593	622
Grp Sat Flow(s),veh/h/ln	1273	0	1585	660	0	1752	1774	1863	1583	1774	1770	1858
Q Serve(g_s), s	1.0	0.0	30.0	0.0	0.0	4.9	25.0	26.6	0.2	0.3	33.0	33.0
Cycle Q Clear(g_c), s	5.8	0.0	30.0	30.0	0.0	4.9	25.0	26.6	0.2	0.3	33.0	33.0
Prop In Lane	1.00		0.99	1.00		0.36	1.00		1.00	1.00		0.01
Lane Grp Cap(c), veh/h	392	0	476	72	0	525	444	1071	910	9	584	613
V/C Ratio(X)	0.04	0.00	1.74	0.40	0.00	0.22	1.01	0.67	0.01	0.54	1.01	1.02
Avail Cap(c_a), veh/h	392	0	476	72	0	525	444	1071	910	71	584	613
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.4	0.0	35.0	50.0	0.0	26.2	37.5	14.7	9.1	49.6	33.5	33.5
Incr Delay (d2), s/veh	0.0	0.0	341.2	3.6	0.0	0.2	44.1	3.3	0.0	41.8	41.0	40.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	58.2	0.9	0.0	2.4	17.6	14.5	0.1	0.2	22.7	23.7
LnGrp Delay(d),s/veh	28.4	0.0	376.2	53.6	0.0	26.4	81.7	18.0	9.1	91.4	74.5	73.7
LnGrp LOS	C		F	D		C	F	B	A	F	F	F
Approach Vol, veh/h		843			143			1169			1220	
Approach Delay, s/veh		369.6			31.9			42.3			74.1	
Approach LOS		F			C			D			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.5	61.5		34.0	29.0	37.0		34.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	4.0	54.0		30.0	25.0	33.0		30.0				
Max Q Clear Time (g_c+I1), s	2.3	28.6		32.0	27.0	35.0		32.0				
Green Ext Time (p_c), s	0.0	15.0		0.0	0.0	0.0		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			135.1									
HCM 2010 LOS			F									

HCM 2010 Signalized Intersection Summary  
 5: Bear Valley Parkway & Las Palmas Ave

Existing + CP AM  
 3/18/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	239	20	154	37	13	6	155	883	20	6	1503	355
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	351	29	226	67	24	11	209	1193	27	7	1689	399
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.68	0.68	0.68	0.55	0.55	0.55	0.74	0.74	0.74	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	365	42	328	167	278	128	195	2275	51	13	1548	352
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.11	0.64	0.64	0.01	0.54	0.54
Sat Flow, veh/h	1368	183	1428	1120	1210	555	1774	3538	80	1774	2866	651
Grp Volume(v), veh/h	351	0	255	67	0	35	209	597	623	7	1017	1071
Grp Sat Flow(s),veh/h/ln	1368	0	1611	1120	0	1765	1774	1770	1849	1774	1770	1748
Q Serve(g_s), s	21.4	0.0	14.5	5.8	0.0	1.6	11.0	18.2	18.2	0.4	54.0	54.0
Cycle Q Clear(g_c), s	23.0	0.0	14.5	20.3	0.0	1.6	11.0	18.2	18.2	0.4	54.0	54.0
Prop In Lane	1.00		0.89	1.00		0.31	1.00		0.04	1.00		0.37
Lane Grp Cap(c), veh/h	365	0	370	167	0	406	195	1138	1189	13	956	944
V/C Ratio(X)	0.96	0.00	0.69	0.40	0.00	0.09	1.07	0.52	0.52	0.56	1.06	1.13
Avail Cap(c_a), veh/h	365	0	370	167	0	406	195	1138	1189	71	956	944
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.0	0.0	35.2	44.5	0.0	30.2	44.5	9.6	9.6	49.5	23.0	23.0
Incr Delay (d2), s/veh	36.8	0.0	5.3	1.5	0.0	0.1	84.5	1.7	1.7	33.5	47.9	73.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.4	0.0	7.0	1.9	0.0	0.8	9.9	9.3	9.7	0.3	38.7	45.0
LnGrp Delay(d),s/veh	77.8	0.0	40.5	46.0	0.0	30.3	129.0	11.3	11.3	83.0	70.9	96.7
LnGrp LOS	E		D	D		C	F	B	B	F	F	F
Approach Vol, veh/h		606			102			1429			2095	
Approach Delay, s/veh		62.1			40.7			28.5			84.1	
Approach LOS		E			D			C			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.7	68.3		27.0	15.0	58.0		27.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	4.0	61.0		23.0	11.0	54.0		23.0				
Max Q Clear Time (g_c+I1), s	2.4	20.2		25.0	13.0	56.0		22.3				
Green Ext Time (p_c), s	0.0	34.6		0.0	0.0	0.0		0.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			61.2									
HCM 2010 LOS			E									

HCM 2010 Signalized Intersection Summary  
 1: Bear Valley Parkway & San Pasqual Valley Rd (SR 78)

Existing + CP PM  
 3/18/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	27	515	117	126	463	69	116	820	241	67	484	29
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	29	548	124	148	545	81	127	901	265	78	563	34
Adj No. of Lanes	1	2	1	1	2	0	2	2	0	1	2	0
Peak Hour Factor	0.94	0.94	0.94	0.85	0.85	0.85	0.91	0.91	0.91	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	87	1051	470	178	1078	160	349	791	232	151	938	57
Arrive On Green	0.05	0.30	0.30	0.10	0.35	0.35	0.10	0.29	0.29	0.08	0.28	0.28
Sat Flow, veh/h	1774	3539	1583	1774	3093	458	3442	2700	793	1774	3392	205
Grp Volume(v), veh/h	29	548	124	148	311	315	127	590	576	78	293	304
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1782	1721	1770	1723	1774	1770	1827
Q Serve(g_s), s	1.7	13.6	6.3	8.7	14.7	14.8	3.6	31.0	31.0	4.5	15.2	15.3
Cycle Q Clear(g_c), s	1.7	13.6	6.3	8.7	14.7	14.8	3.6	31.0	31.0	4.5	15.2	15.3
Prop In Lane	1.00		1.00	1.00		0.26	1.00		0.46	1.00		0.11
Lane Grp Cap(c), veh/h	87	1051	470	178	617	621	349	519	505	151	490	505
V/C Ratio(X)	0.34	0.52	0.26	0.83	0.50	0.51	0.36	1.14	1.14	0.52	0.60	0.60
Avail Cap(c_a), veh/h	151	1051	470	281	617	621	357	519	505	211	490	505
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.7	31.0	28.4	46.8	27.3	27.3	44.4	37.4	37.4	46.4	33.2	33.2
Incr Delay (d2), s/veh	0.8	1.9	1.4	5.9	2.9	2.9	0.2	83.1	84.8	1.0	5.3	5.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	6.9	2.9	4.5	7.7	7.8	1.7	27.1	26.6	2.2	8.1	8.4
LnGrp Delay(d),s/veh	49.5	32.8	29.8	52.7	30.2	30.3	44.6	120.5	122.2	47.4	38.5	38.4
LnGrp LOS	D	C	C	D	C	C	D	F	F	D	D	D
Approach Vol, veh/h		701			774			1293			675	
Approach Delay, s/veh		33.0			34.5			113.8			39.5	
Approach LOS		C			C			F			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.8	38.1	15.9	36.0	10.4	43.6	14.2	37.7				
Change Period (Y+Rc), s	* 5.2	6.7	* 5.2	6.7	* 5.2	6.7	* 5.2	6.7				
Max Green Setting (Gmax), s	* 17	29.1	* 11	29.3	* 9	36.9	* 13	27.7				
Max Q Clear Time (g_c+I1), s	10.7	15.6	5.6	17.3	3.7	16.8	6.5	33.0				
Green Ext Time (p_c), s	0.1	10.5	0.1	11.0	0.0	14.6	0.0	0.0				

Intersection Summary												
HCM 2010 Ctrl Delay			65.0									
HCM 2010 LOS			E									

Notes

\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

**Intersection**

Int Delay, s/veh 0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	2	4	7	1168	715	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	30	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	4	8	1270	777	2

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	2063	778	779
Stage 1	778	-	-
Stage 2	1285	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	60	396	838
Stage 1	453	-	-
Stage 2	260	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	59	396	838
Mov Cap-2 Maneuver	175	-	-
Stage 1	453	-	-
Stage 2	258	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.2	0.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	838	-	279	-	-
HCM Lane V/C Ratio	0.009	-	0.023	-	-
HCM Control Delay (s)	9.3	-	18.2	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

**Intersection**

Int Delay, s/veh 1.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	6	47	91	1169	711	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Stop
Storage Length	110	0	130	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	63	63	91	91	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	10	75	100	1285	790	9

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	2275	790	790
Stage 1	790	-	-
Stage 2	1485	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	44	390	830
Stage 1	447	-	-
Stage 2	207	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	39	390	830
Mov Cap-2 Maneuver	39	-	-
Stage 1	447	-	-
Stage 2	182	-	-

Approach	EB	NB	SB
HCM Control Delay, s	28.7	0.7	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	830	-	39	390	-	-
HCM Lane V/C Ratio	0.12	-	0.244	0.191	-	-
HCM Control Delay (s)	9.9	-	124.9	16.4	-	-
HCM Lane LOS	A	-	F	C	-	-
HCM 95th %tile Q(veh)	0.4	-	0.8	0.7	-	-

HCM 2010 Signalized Intersection Summary  
4: Bear Valley Parkway & Sunset Drive

Existing + CP PM  
3/18/2014

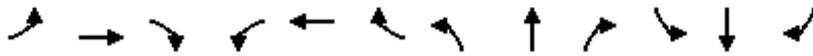
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	14	35	292	6	33	27	203	1221	6	6	749	13
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	16	41	340	10	52	43	218	1313	6	6	797	14
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	2	0
Peak Hour Factor	0.86	0.86	0.86	0.63	0.63	0.63	0.93	0.93	0.93	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	226	29	238	75	156	129	255	1311	1115	11	2016	35
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.14	0.70	0.70	0.01	0.57	0.57
Sat Flow, veh/h	1295	173	1436	998	944	781	1774	1863	1583	1774	3559	63
Grp Volume(v), veh/h	16	0	381	10	0	95	218	1313	6	6	396	415
Grp Sat Flow(s),veh/h/ln	1295	0	1609	998	0	1725	1774	1863	1583	1774	1770	1852
Q Serve(g_s), s	1.1	0.0	16.0	0.0	0.0	4.7	11.6	68.0	0.1	0.3	12.1	12.1
Cycle Q Clear(g_c), s	5.8	0.0	16.0	16.0	0.0	4.7	11.6	68.0	0.1	0.3	12.1	12.1
Prop In Lane	1.00		0.89	1.00		0.45	1.00		1.00	1.00		0.03
Lane Grp Cap(c), veh/h	226	0	267	75	0	286	255	1311	1115	11	1002	1049
V/C Ratio(X)	0.07	0.00	1.43	0.13	0.00	0.33	0.86	1.00	0.01	0.55	0.40	0.40
Avail Cap(c_a), veh/h	226	0	267	75	0	286	386	1311	1115	73	1002	1049
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.1	0.0	40.3	48.3	0.0	35.6	40.4	14.3	4.2	47.9	11.7	11.7
Incr Delay (d2), s/veh	0.1	0.0	213.5	0.8	0.0	0.7	11.3	25.2	0.0	36.7	1.2	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	22.8	0.3	0.0	2.3	6.5	43.4	0.0	0.3	6.2	6.4
LnGrp Delay(d),s/veh	38.3	0.0	253.8	49.1	0.0	36.3	51.7	39.5	4.3	84.6	12.9	12.8
LnGrp LOS	D		F	D		D	D	F	A	F	B	B
Approach Vol, veh/h		397			105			1537			817	
Approach Delay, s/veh		245.1			37.5			41.1			13.4	
Approach LOS		F			D			D			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.6	72.0		20.0	17.9	58.7		20.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	4.0	68.0		16.0	21.0	51.0		16.0				
Max Q Clear Time (g_c+I1), s	2.3	70.0		18.0	13.6	14.1		18.0				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.3	24.5		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			61.4									
HCM 2010 LOS			E									

HCM 2010 Signalized Intersection Summary  
5: Bear Valley Parkway & Las Palmas Ave

Existing + CP PM  
3/18/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	54	5	25	20	0	2	23	1375	32	6	957	53
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	79	7	37	36	0	4	31	1858	43	7	1075	60
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.68	0.68	0.68	0.55	0.55	0.55	0.74	0.74	0.74	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	206	22	116	171	0	135	44	2682	62	13	2525	141
Arrive On Green	0.09	0.09	0.09	0.09	0.00	0.09	0.02	0.76	0.76	0.01	0.74	0.74
Sat Flow, veh/h	1407	258	1364	1357	0	1583	1774	3536	82	1774	3409	190
Grp Volume(v), veh/h	79	0	44	36	0	4	31	926	975	7	558	577
Grp Sat Flow(s),veh/h/ln	1407	0	1622	1357	0	1583	1774	1770	1848	1774	1770	1829
Q Serve(g_s), s	4.4	0.0	2.1	2.1	0.0	0.2	1.4	21.4	21.7	0.3	9.6	9.6
Cycle Q Clear(g_c), s	4.6	0.0	2.1	4.1	0.0	0.2	1.4	21.4	21.7	0.3	9.6	9.6
Prop In Lane	1.00		0.84	1.00		1.00	1.00		0.04	1.00		0.10
Lane Grp Cap(c), veh/h	206	0	138	171	0	135	44	1342	1402	13	1311	1355
V/C Ratio(X)	0.38	0.00	0.32	0.21	0.00	0.03	0.70	0.69	0.70	0.55	0.43	0.43
Avail Cap(c_a), veh/h	488	0	464	443	0	453	243	1342	1402	88	1311	1355
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.8	0.0	34.6	36.5	0.0	33.7	38.9	4.9	5.0	39.8	4.0	4.0
Incr Delay (d2), s/veh	1.2	0.0	1.3	0.6	0.0	0.1	18.4	2.9	2.9	31.9	1.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	0.0	1.0	0.8	0.0	0.1	0.9	11.1	11.9	0.3	5.0	5.2
LnGrp Delay(d),s/veh	37.0	0.0	35.9	37.1	0.0	33.8	57.3	7.9	7.8	71.7	5.0	4.9
LnGrp LOS	D		D	D		C	E	A	A	E	A	A
Approach Vol, veh/h		123			40			1932			1142	
Approach Delay, s/veh		36.6			36.8			8.6			5.4	
Approach LOS		D			D			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.6	65.0		10.9	6.0	63.6		10.9				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	4.0	61.0		23.0	11.0	54.0		23.0				
Max Q Clear Time (g_c+I1), s	2.3	23.7		6.6	3.4	11.6		6.1				
Green Ext Time (p_c), s	0.0	29.3		0.5	0.0	32.4		0.5				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			8.9									
HCM 2010 LOS			A									

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	18	371	142	176	525	89	117	375	113	90	712	18
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	19	395	151	207	618	105	129	412	124	105	828	21
Adj No. of Lanes	1	2	1	1	2	0	2	2	0	1	2	0
Peak Hour Factor	0.94	0.94	0.94	0.85	0.85	0.85	0.91	0.91	0.91	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	64	960	429	237	1116	189	345	765	228	158	963	24
Arrive On Green	0.04	0.27	0.27	0.13	0.37	0.37	0.10	0.28	0.28	0.09	0.27	0.27
Sat Flow, veh/h	1774	3539	1583	1774	3028	514	3442	2690	801	1774	3527	89
Grp Volume(v), veh/h	19	395	151	207	361	362	129	270	266	105	415	434
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1772	1721	1770	1721	1774	1770	1847
Q Serve(g_s), s	1.1	9.8	8.2	12.3	17.3	17.4	3.8	13.8	14.1	6.1	23.9	23.9
Cycle Q Clear(g_c), s	1.1	9.8	8.2	12.3	17.3	17.4	3.8	13.8	14.1	6.1	23.9	23.9
Prop In Lane	1.00		1.00	1.00		0.29	1.00		0.47	1.00		0.05
Lane Grp Cap(c), veh/h	64	960	429	237	652	653	345	503	489	158	483	504
V/C Ratio(X)	0.30	0.41	0.35	0.87	0.55	0.55	0.37	0.54	0.54	0.66	0.86	0.86
Avail Cap(c_a), veh/h	149	960	429	278	652	653	353	503	489	208	483	504
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	50.4	32.1	31.5	45.6	26.9	26.9	45.1	32.4	32.5	47.3	37.0	37.0
Incr Delay (d2), s/veh	0.9	1.3	2.3	20.6	3.4	3.4	0.2	4.1	4.3	1.9	17.8	17.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.6	4.9	3.9	7.4	9.0	9.1	1.8	7.3	7.2	3.1	14.0	14.6
LnGrp Delay(d),s/veh	51.3	33.4	33.7	66.2	30.2	30.3	45.4	36.5	36.8	49.3	54.8	54.2
LnGrp LOS	D	C	C	E	C	C	D	D	D	D	D	D
Approach Vol, veh/h		565			930			665			954	
Approach Delay, s/veh		34.1			38.2			38.3			53.9	
Approach LOS		C			D			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	19.5	35.8	16.0	36.0	9.1	46.2	14.8	37.2				
Change Period (Y+Rc), s	* 5.2	6.7	* 5.2	6.7	* 5.2	6.7	* 5.2	6.7				
Max Green Setting (Gmax), s	* 17	29.1	* 11	29.3	* 9	36.9	* 13	27.7				
Max Q Clear Time (g_c+I1), s	14.3	11.8	5.8	25.9	3.1	19.4	8.1	16.1				
Green Ext Time (p_c), s	0.1	12.7	0.1	3.0	0.0	12.8	0.0	9.6				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			42.3									
HCM 2010 LOS			D									
<b>Notes</b>												
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.												



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↑	↕	↕	↕	↕
Volume (veh/h)	3	0	9	26	0	5	4	565	9	4	983	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	3	0	10	28	0	5	4	614	10	4	1068	0
Adj No. of Lanes	0	1	0	0	1	0	1	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	195	0	57	323	0	10	365	1181	1004	652	1181	0
Arrive On Green	0.04	0.00	0.04	0.04	0.00	0.04	0.63	0.63	0.63	0.63	0.63	0.00
Sat Flow, veh/h	388	0	1295	1256	0	224	526	1863	1583	797	1863	0
Grp Volume(v), veh/h	13	0	0	33	0	0	4	614	10	4	1068	0
Grp Sat Flow(s),veh/h/ln	1683	0	0	1480	0	0	526	1863	1583	797	1863	0
Q Serve(g_s), s	0.0	0.0	0.0	0.4	0.0	0.0	0.2	4.5	0.1	0.1	12.2	0.0
Cycle Q Clear(g_c), s	0.2	0.0	0.0	0.5	0.0	0.0	12.4	4.5	0.1	4.5	12.2	0.0
Prop In Lane	0.23		0.77	0.85		0.15	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	252	0	0	333	0	0	365	1181	1004	652	1181	0
V/C Ratio(X)	0.05	0.00	0.00	0.10	0.00	0.00	0.01	0.52	0.01	0.01	0.90	0.00
Avail Cap(c_a), veh/h	1176	0	0	1188	0	0	370	1200	1020	660	1200	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	11.4	0.0	0.0	11.6	0.0	0.0	9.2	2.5	1.7	3.7	3.9	0.0
Incr Delay (d2), s/veh	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.4	0.0	0.0	9.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.0	0.0	0.0	0.2	0.0	0.0	0.0	2.3	0.0	0.0	8.8	0.0
LnGrp Delay(d),s/veh	11.5	0.0	0.0	11.7	0.0	0.0	9.2	2.9	1.7	3.7	13.6	0.0
LnGrp LOS	B			B			A	A	A	A	B	
Approach Vol, veh/h		13			33			628			1072	
Approach Delay, s/veh		11.5			11.7			2.9			13.6	
Approach LOS		B			B			A			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		19.7		5.1		19.7		5.1				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		16.0		16.0		16.0		16.0				
Max Q Clear Time (g_c+I1), s		14.4		2.2		14.2		2.5				
Green Ext Time (p_c), s		1.4		0.1		1.5		0.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				9.7								
HCM 2010 LOS				A								

**Intersection**

Int Delay, s/veh 7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	4	133	111	574	989	29
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Stop
Storage Length	110	0	130	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	63	63	91	91	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	211	122	631	1099	32

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1974	1099	0
Stage 1	1099	-	-
Stage 2	875	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	68	258	635
Stage 1	319	-	-
Stage 2	408	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	55	258	635
Mov Cap-2 Maneuver	55	-	-
Stage 1	319	-	-
Stage 2	330	-	-

Approach	EB	NB	SB
HCM Control Delay, s	61.1	1.9	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	635	-	55	258	-	-
HCM Lane V/C Ratio	0.192	-	0.115	0.818	-	-
HCM Control Delay (s)	12	-	78.8	60.6	-	-
HCM Lane LOS	B	-	F	F	-	-
HCM 95th %tile Q(veh)	0.7	-	0.4	6.4	-	-

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	18	6	705	18	46	26	415	671	6	5	1145	11
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	21	7	820	29	73	41	446	722	6	5	1218	12
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	2	0
Peak Hour Factor	0.86	0.86	0.86	0.63	0.63	0.63	0.93	0.93	0.93	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	392	4	472	72	336	189	444	1071	910	9	1185	12
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.25	0.57	0.57	0.01	0.33	0.33
Sat Flow, veh/h	1273	13	1572	660	1122	630	1774	1863	1583	1774	3591	35
Grp Volume(v), veh/h	21	0	827	29	0	114	446	722	6	5	600	630
Grp Sat Flow(s),veh/h/ln	1273	0	1585	660	0	1752	1774	1863	1583	1774	1770	1857
Q Serve(g_s), s	1.3	0.0	30.0	0.0	0.0	4.9	25.0	26.9	0.2	0.3	33.0	33.0
Cycle Q Clear(g_c), s	6.1	0.0	30.0	30.0	0.0	4.9	25.0	26.9	0.2	0.3	33.0	33.0
Prop In Lane	1.00		0.99	1.00		0.36	1.00		1.00	1.00		0.02
Lane Grp Cap(c), veh/h	392	0	476	72	0	525	444	1071	910	9	584	613
V/C Ratio(X)	0.05	0.00	1.74	0.40	0.00	0.22	1.01	0.67	0.01	0.54	1.03	1.03
Avail Cap(c_a), veh/h	392	0	476	72	0	525	444	1071	910	71	584	613
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	28.5	0.0	35.0	50.0	0.0	26.2	37.5	14.8	9.1	49.6	33.5	33.5
Incr Delay (d2), s/veh	0.1	0.0	341.2	3.6	0.0	0.2	44.1	3.4	0.0	41.8	44.5	43.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.4	0.0	58.2	0.9	0.0	2.4	17.6	14.6	0.1	0.2	23.3	24.3
LnGrp Delay(d),s/veh	28.6	0.0	376.2	53.6	0.0	26.4	81.7	18.2	9.1	91.4	78.0	77.2
LnGrp LOS	C		F	D		C	F	B	A	F	F	F
Approach Vol, veh/h		848			143			1174			1235	
Approach Delay, s/veh		367.6			31.9			42.2			77.7	
Approach LOS		F			C			D			E	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.5	61.5		34.0	29.0	37.0		34.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	4.0	54.0		30.0	25.0	33.0		30.0				
Max Q Clear Time (g_c+I1), s	2.3	28.9		32.0	27.0	35.0		32.0				
Green Ext Time (p_c), s	0.0	15.1		0.0	0.0	0.0		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			135.8									
HCM 2010 LOS			F									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	240	20	154	37	13	6	155	886	20	6	1512	357
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	353	29	226	67	24	11	209	1197	27	7	1699	401
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.68	0.68	0.68	0.55	0.55	0.55	0.74	0.74	0.74	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	365	42	328	167	278	128	195	2275	51	13	1548	351
Arrive On Green	0.23	0.23	0.23	0.23	0.23	0.23	0.11	0.64	0.64	0.01	0.54	0.54
Sat Flow, veh/h	1368	183	1428	1120	1210	555	1774	3538	80	1774	2867	651
Grp Volume(v), veh/h	353	0	255	67	0	35	209	598	626	7	1023	1077
Grp Sat Flow(s),veh/h/ln	1368	0	1611	1120	0	1765	1774	1770	1849	1774	1770	1748
Q Serve(g_s), s	21.4	0.0	14.5	5.8	0.0	1.6	11.0	18.2	18.3	0.4	54.0	54.0
Cycle Q Clear(g_c), s	23.0	0.0	14.5	20.3	0.0	1.6	11.0	18.2	18.3	0.4	54.0	54.0
Prop In Lane	1.00		0.89	1.00		0.31	1.00		0.04	1.00		0.37
Lane Grp Cap(c), veh/h	365	0	370	167	0	406	195	1138	1189	13	956	944
V/C Ratio(X)	0.97	0.00	0.69	0.40	0.00	0.09	1.07	0.53	0.53	0.56	1.07	1.14
Avail Cap(c_a), veh/h	365	0	370	167	0	406	195	1138	1189	71	956	944
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.1	0.0	35.2	44.5	0.0	30.2	44.5	9.6	9.6	49.5	23.0	23.0
Incr Delay (d2), s/veh	38.1	0.0	5.3	1.5	0.0	0.1	84.5	1.7	1.7	33.5	49.9	76.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.0	0.0	7.0	1.9	0.0	0.8	9.9	9.4	9.8	0.3	39.3	45.7
LnGrp Delay(d),s/veh	79.2	0.0	40.5	46.0	0.0	30.3	129.0	11.4	11.3	83.0	72.9	99.3
LnGrp LOS	E		D	D		C	F	B	B	F	F	F
Approach Vol, veh/h		608			102			1433			2107	
Approach Delay, s/veh		63.0			40.7			28.5			86.4	
Approach LOS		E			D			C			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.7	68.3		27.0	15.0	58.0		27.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	4.0	61.0		23.0	11.0	54.0		23.0				
Max Q Clear Time (g_c+1), s	4.0	20.3		25.0	13.0	56.0		22.3				
Green Ext Time (p_c), s	0.0	34.7		0.0	0.0	0.0		0.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			62.4									
HCM 2010 LOS			E									

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	27	515	125	127	463	69	117	821	241	67	486	29
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	29	548	133	149	545	81	129	902	265	78	565	34
Adj No. of Lanes	1	2	1	1	2	0	2	2	0	1	2	0
Peak Hour Factor	0.94	0.94	0.94	0.85	0.85	0.85	0.91	0.91	0.91	0.86	0.86	0.86
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	87	1049	469	179	1078	160	349	792	232	151	938	56
Arrive On Green	0.05	0.30	0.30	0.10	0.35	0.35	0.10	0.29	0.29	0.08	0.28	0.28
Sat Flow, veh/h	1774	3539	1583	1774	3093	458	3442	2701	792	1774	3393	204
Grp Volume(v), veh/h	29	548	133	149	311	315	129	590	577	78	294	305
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1782	1721	1770	1723	1774	1770	1827
Q Serve(g_s), s	1.7	13.7	6.8	8.7	14.7	14.8	3.7	31.1	31.1	4.5	15.3	15.3
Cycle Q Clear(g_c), s	1.7	13.7	6.8	8.7	14.7	14.8	3.7	31.1	31.1	4.5	15.3	15.3
Prop In Lane	1.00		1.00	1.00		0.26	1.00		0.46	1.00		0.11
Lane Grp Cap(c), veh/h	87	1049	469	179	616	621	349	519	505	151	490	505
V/C Ratio(X)	0.34	0.52	0.28	0.83	0.50	0.51	0.37	1.14	1.14	0.52	0.60	0.60
Avail Cap(c_a), veh/h	151	1049	469	281	616	621	357	519	505	211	490	505
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.7	31.0	28.6	46.7	27.3	27.3	44.4	37.4	37.4	46.4	33.2	33.3
Incr Delay (d2), s/veh	0.8	1.9	1.5	6.2	2.9	2.9	0.2	83.3	85.0	1.0	5.4	5.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.8	7.0	3.2	4.6	7.7	7.8	1.8	27.1	26.7	2.2	8.2	8.4
LnGrp Delay(d),s/veh	49.6	32.9	30.1	53.0	30.2	30.3	44.7	120.7	122.5	47.4	38.6	38.5
LnGrp LOS	D	C	C	D	C	C	D	F	F	D	D	D
Approach Vol, veh/h		710			775			1296			677	
Approach Delay, s/veh		33.1			34.6			113.9			39.6	
Approach LOS		C			C			F			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	15.9	38.1	16.0	36.0	10.4	43.6	14.2	37.8				
Change Period (Y+Rc), s	* 5.2	6.7	* 5.2	6.7	* 5.2	6.7	* 5.2	6.7				
Max Green Setting (Gmax), s	* 17	29.1	* 11	29.3	* 9	36.9	* 13	27.7				
Max Q Clear Time (g_c+I1), s	10.7	15.7	5.7	17.3	3.7	16.8	6.5	33.1				
Green Ext Time (p_c), s	0.1	10.5	0.1	11.0	0.0	14.7	0.0	0.0				

Intersection Summary												
HCM 2010 Ctrl Delay			65.0									
HCM 2010 LOS			E									

Notes

\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↕	↑	↗	↖	↖	↗
Volume (veh/h)	2	0	4	14	0	2	7	1168	27	12	715	2
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	2	0	4	15	0	2	8	1270	29	13	777	2
Adj No. of Lanes	0	1	0	0	1	0	1	1	1	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	208	0	26	306	0	4	569	1212	1031	293	1209	3
Arrive On Green	0.02	0.00	0.02	0.02	0.00	0.02	0.65	0.65	0.65	0.65	0.65	0.65
Sat Flow, veh/h	555	0	1110	1301	0	173	690	1863	1583	423	1857	5
Grp Volume(v), veh/h	6	0	0	17	0	0	8	1270	29	13	0	779
Grp Sat Flow(s),veh/h/ln1665	0	0	0	1474	0	0	690	1863	1583	423	0	1862
Q Serve(g_s), s	0.0	0.0	0.0	0.2	0.0	0.0	0.2	16.0	0.2	0.0	0.0	6.2
Cycle Q Clear(g_c), s	0.1	0.0	0.0	0.3	0.0	0.0	6.3	16.0	0.2	16.0	0.0	6.2
Prop In Lane	0.33		0.67	0.88		0.12	1.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	235	0	0	311	0	0	569	1212	1031	293	0	1212
V/C Ratio(X)	0.03	0.00	0.00	0.05	0.00	0.00	0.01	1.05	0.03	0.04	0.00	0.64
Avail Cap(c_a), veh/h	1189	0	0	1205	0	0	569	1212	1031	293	0	1212
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.8	0.0	0.0	11.8	0.0	0.0	4.5	4.3	1.5	12.3	0.0	2.6
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.1	0.0	0.0	0.0	39.2	0.0	0.1	0.0	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.0	0.0	0.0	0.1	0.0	0.0	0.0	20.6	0.1	0.1	0.0	3.4
LnGrp Delay(d),s/veh	11.8	0.0	0.0	11.9	0.0	0.0	4.5	43.5	1.5	12.4	0.0	3.7
LnGrp LOS	B			B			A	F	A	B		A
Approach Vol, veh/h		6			17			1307			792	
Approach Delay, s/veh		11.8			11.9			42.3			3.9	
Approach LOS		B			B			D			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6		8				
Phs Duration (G+Y+Rc), s		20.0		4.6		20.0		4.6				
Change Period (Y+Rc), s		4.0		4.0		4.0		4.0				
Max Green Setting (Gmax), s		16.0		16.0		16.0		16.0				
Max Q Clear Time (g_c+I1), s		18.0		2.1		18.0		2.3				
Green Ext Time (p_c), s		0.0		0.0		0.0		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				27.6								
HCM 2010 LOS				C								

**Intersection**

Int Delay, s/veh 1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	8	47	91	1194	719	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	Stop
Storage Length	110	0	130	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	63	63	91	91	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	75	100	1312	799	16

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	2311	799	0
Stage 1	799	-	-
Stage 2	1512	-	-
Critical Hdwy	6.42	6.22	4.12
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	3.318	2.218
Pot Cap-1 Maneuver	42	386	824
Stage 1	443	-	-
Stage 2	201	-	-
Platoon blocked, %			-
Mov Cap-1 Maneuver	37	386	824
Mov Cap-2 Maneuver	37	-	-
Stage 1	443	-	-
Stage 2	177	-	-

Approach	EB	NB	SB
HCM Control Delay, s	35.4	0.7	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	824	-	37	386	-	-
HCM Lane V/C Ratio	0.121	-	0.343	0.193	-	-
HCM Control Delay (s)	10	-	146.5	16.5	-	-
HCM Lane LOS	A	-	F	C	-	-
HCM 95th %tile Q(veh)	0.4	-	1.1	0.7	-	-

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	25	35	292	6	33	27	203	1235	6	6	755	15
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1863	1863	1863	1900
Adj Flow Rate, veh/h	29	41	340	10	52	43	218	1328	6	6	803	16
Adj No. of Lanes	1	1	0	1	1	0	1	1	1	1	2	0
Peak Hour Factor	0.86	0.86	0.86	0.63	0.63	0.63	0.93	0.93	0.93	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	226	29	238	75	156	129	255	1311	1115	11	2010	40
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.14	0.70	0.70	0.01	0.57	0.57
Sat Flow, veh/h	1295	173	1436	998	944	781	1774	1863	1583	1774	3549	71
Grp Volume(v), veh/h	29	0	381	10	0	95	218	1328	6	6	400	419
Grp Sat Flow(s),veh/h/ln	1295	0	1609	998	0	1725	1774	1863	1583	1774	1770	1850
Q Serve(g_s), s	2.0	0.0	16.0	0.0	0.0	4.7	11.6	68.0	0.1	0.3	12.2	12.2
Cycle Q Clear(g_c), s	6.7	0.0	16.0	16.0	0.0	4.7	11.6	68.0	0.1	0.3	12.2	12.2
Prop In Lane	1.00		0.89	1.00		0.45	1.00		1.00	1.00		0.04
Lane Grp Cap(c), veh/h	226	0	267	75	0	286	255	1311	1115	11	1002	1048
V/C Ratio(X)	0.13	0.00	1.43	0.13	0.00	0.33	0.86	1.01	0.01	0.55	0.40	0.40
Avail Cap(c_a), veh/h	226	0	267	75	0	286	386	1311	1115	73	1002	1048
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.5	0.0	40.3	48.3	0.0	35.6	40.4	14.3	4.2	47.9	11.7	11.7
Incr Delay (d2), s/veh	0.3	0.0	213.5	0.8	0.0	0.7	11.3	28.0	0.0	36.7	1.2	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.7	0.0	22.8	0.3	0.0	2.3	6.5	44.5	0.0	0.3	6.2	6.5
LnGrp Delay(d),s/veh	38.8	0.0	253.8	49.1	0.0	36.3	51.7	42.3	4.3	84.6	12.9	12.9
LnGrp LOS	D		F	D		D	D	F	A	F	B	B
Approach Vol, veh/h		410			105			1552			825	
Approach Delay, s/veh		238.6			37.5			43.5			13.4	
Approach LOS		F			D			D			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.6	72.0		20.0	17.9	58.7		20.0				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	4.0	68.0		16.0	21.0	51.0		16.0				
Max Q Clear Time (g_c+I1), s	2.3	70.0		18.0	13.6	14.2		18.0				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.3	24.9		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			62.4									
HCM 2010 LOS			E									



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	56	5	25	20	0	2	23	1387	32	6	962	54
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	82	7	37	36	0	4	31	1874	43	7	1081	61
Adj No. of Lanes	1	1	0	1	1	0	1	2	0	1	2	0
Peak Hour Factor	0.68	0.68	0.68	0.55	0.55	0.55	0.74	0.74	0.74	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	209	23	119	174	0	139	44	2676	61	13	2517	142
Arrive On Green	0.09	0.09	0.09	0.09	0.00	0.09	0.02	0.76	0.76	0.01	0.74	0.74
Sat Flow, veh/h	1407	258	1364	1357	0	1583	1774	3537	81	1774	3406	192
Grp Volume(v), veh/h	82	0	44	36	0	4	31	934	983	7	561	581
Grp Sat Flow(s),veh/h/ln	1407	0	1622	1357	0	1583	1774	1770	1848	1774	1770	1829
Q Serve(g_s), s	4.6	0.0	2.1	2.1	0.0	0.2	1.4	22.0	22.3	0.3	9.8	9.8
Cycle Q Clear(g_c), s	4.8	0.0	2.1	4.1	0.0	0.2	1.4	22.0	22.3	0.3	9.8	9.8
Prop In Lane	1.00		0.84	1.00		1.00	1.00		0.04	1.00		0.11
Lane Grp Cap(c), veh/h	209	0	142	174	0	139	44	1339	1398	13	1307	1351
V/C Ratio(X)	0.39	0.00	0.31	0.21	0.00	0.03	0.70	0.70	0.70	0.55	0.43	0.43
Avail Cap(c_a), veh/h	487	0	463	442	0	452	242	1339	1398	88	1307	1351
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.8	0.0	34.5	36.4	0.0	33.7	39.0	5.1	5.1	39.9	4.0	4.0
Incr Delay (d2), s/veh	1.2	0.0	1.2	0.6	0.0	0.1	18.4	3.0	3.0	31.9	1.0	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(-26165%),veh/ln	0.0	0.0	1.0	0.8	0.0	0.1	0.9	11.5	12.1	0.3	5.1	5.2
LnGrp Delay(d),s/veh	37.0	0.0	35.7	37.0	0.0	33.7	57.4	8.1	8.1	71.8	5.1	5.0
LnGrp LOS	D		D	D		C	E	A	A	E	A	A
Approach Vol, veh/h		126			40			1948			1149	
Approach Delay, s/veh		36.6			36.7			8.9			5.5	
Approach LOS		D			D			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.6	65.0		11.1	6.0	63.6		11.1				
Change Period (Y+Rc), s	4.0	4.0		4.0	4.0	4.0		4.0				
Max Green Setting (Gmax), s	4.0	61.0		23.0	11.0	54.0		23.0				
Max Q Clear Time (g_c+1), s	4.0	24.3		6.8	3.4	11.8		6.1				
Green Ext Time (p_c), s	0.0	29.2		0.5	0.0	32.6		0.5				

**Intersection Summary**

HCM 2010 Ctrl Delay	9.1
HCM 2010 LOS	A

**APPENDIX C**  
**POST-MITIGATION ANALYSIS WORKSHEETS**

This Page Left Blank Intentionally

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Volume (veh/h)	4	133	111	574	989	29		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900		
Adj Flow Rate, veh/h	6	211	122	631	1099	0		
Adj No. of Lanes	1	1	1	2	1	0		
Peak Hour Factor	0.63	0.63	0.91	0.91	0.90	0.90		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	274	244	148	2629	1132	0		
Arrive On Green	0.15	0.15	0.08	0.74	0.61	0.00		
Sat Flow, veh/h	1774	1583	1774	3632	1863	0		
Grp Volume(v), veh/h	6	211	122	631	1099	0		
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1770	1863	0		
Q Serve(g_s), s	0.3	11.4	5.9	4.9	49.3	0.0		
Cycle Q Clear(g_c), s	0.3	11.4	5.9	4.9	49.3	0.0		
Prop In Lane	1.00	1.00	1.00			0.00		
Lane Grp Cap(c), veh/h	274	244	148	2629	1132	0		
V/C Ratio(X)	0.02	0.86	0.82	0.24	0.97	0.00		
Avail Cap(c_a), veh/h	327	292	148	2629	1132	0		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00		
Uniform Delay (d), s/veh	31.4	36.1	39.4	3.5	16.4	0.0		
Incr Delay (d2), s/veh	0.0	20.0	29.7	0.2	20.6	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(-26165%),veh/ln	0.1	10.8	4.1	2.4	31.5	0.0		
LnGrp Delay(d),s/veh	31.4	56.1	69.1	3.7	37.0	0.0		
LnGrp LOS	C	E	E	A	D			
Approach Vol, veh/h	217			753	1099			
Approach Delay, s/veh	55.4			14.3	37.0			
Approach LOS	E			B	D			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		69.4		18.0	11.8	57.6		
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		
Max Green Setting (Gmax), s		64.9		16.1	7.3	53.1		
Max Q Clear Time (g_c+I1), s		6.9		13.4	7.9	51.3		
Green Ext Time (p_c), s		19.9		0.2	0.0	1.5		
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			30.7					
HCM 2010 LOS			C					

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Volume (veh/h)	8	47	91	1194	719	14		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900		
Adj Flow Rate, veh/h	13	75	100	1312	799	0		
Adj No. of Lanes	1	1	1	2	1	0		
Peak Hour Factor	0.63	0.63	0.91	0.91	0.90	0.90		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	112	100	128	2913	1293	0		
Arrive On Green	0.06	0.06	0.07	0.82	0.69	0.00		
Sat Flow, veh/h	1774	1583	1774	3632	1863	0		
Grp Volume(v), veh/h	13	75	100	1312	799	0		
Grp Sat Flow(s),veh/h/ln	1774	1583	1774	1770	1863	0		
Q Serve(g_s), s	0.5	3.7	4.4	8.2	18.2	0.0		
Cycle Q Clear(g_c), s	0.5	3.7	4.4	8.2	18.2	0.0		
Prop In Lane	1.00	1.00	1.00			0.00		
Lane Grp Cap(c), veh/h	112	100	128	2913	1293	0		
V/C Ratio(X)	0.12	0.75	0.78	0.45	0.62	0.00		
Avail Cap(c_a), veh/h	359	321	191	2913	1293	0		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00		
Uniform Delay (d), s/veh	34.9	36.4	36.0	2.0	6.5	0.0		
Incr Delay (d2), s/veh	0.5	10.8	11.4	0.5	2.2	0.0		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(-26165%),veh/ln	0.3	3.5	2.5	4.0	9.9	0.0		
LnGrp Delay(d),s/veh	35.4	47.2	47.4	2.5	8.7	0.0		
LnGrp LOS	D	D	D	A	A			
Approach Vol, veh/h	88			1412	799			
Approach Delay, s/veh	45.5			5.7	8.7			
Approach LOS	D			A	A			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		69.5		9.5	10.2	59.3		
Change Period (Y+Rc), s		4.5		4.5	4.5	4.5		
Max Green Setting (Gmax), s		65.0		16.0	8.5	52.0		
Max Q Clear Time (g_c+I1), s		10.2		5.7	6.4	20.2		
Green Ext Time (p_c), s		24.0		0.1	0.0	18.5		
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			8.2					
HCM 2010 LOS			A					

