URBAN SYSTEMS ASSOCIATES, INC.
PLANNING & TRAFFIC ENGINEERING
CONSULTANTS TO INDUSTRY AND GOVERNMENT

Local Mobility Analysis

Passerelle Horse Ranch Creek

County of San Diego

April 15, 2021

Project Number: 003119

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1.0 EXECUTIVE SUMMARY

The proposed project includes the development of 138 single family detached dwelling units on two parcels for a total of 11.5 acres in the County of San Diego.

The trip generation for the proposed project is calculated to be **1,380** Average Daily Trips (ADT) with **110** AM (**33** in / **77** out) peak hour trips and **138** PM (**97** in / **41** out) peak hour trips.

A study area was determined to the surrounding area and analysis was conducted with the inclusion of project traffic and without, the following tables summarize the intersection analysis level of service for the Existing, Near Term Opening Year (2024), Near Term Opening Year (2024) Plus Project, Horizon Year 2035, and Horizon Year 2035 Plus Project scenarios. The following tables show the summarized studied street segment and intersection analysis:

Table 1-1: Existing Street Segment LOS

Road	Segment	Standard	# of Ln.	Class.	Cap.	Volume	V/C	LOS
Horse Ranch Creek Rd.	South of Stewart Canyon Rd.	County of San Diego	2	2-Cd	16,200	2,177	0.13	B
	Friesian Wy. to Gold Palomino Wy.	County of San Diego	2	2-Cd	16,200	1,992	0.12	B
	Gold Palomino Wy. to Andalusian Wy.	County of San Diego	2	2-Cd	16,200	2,769	0.17	B
	North of SR-76	County of San Diego	2	2-Cd	16,200	3,469	0.21	B
SR-76	Horse Ranch Creek Rd. to I-15 NB Ramps	County of San Diego	6	EXP	108,000	13,421	0.12	A
	I-15 NB Ramps to I-15 SB Ramps	County of San Diego	6	EXP	108,000	23,730	0.22	A
	I-15 SB Ramps to Old Hwy. 395	County of San Diego	6	EXP	108,000	33,766	0.31	A
	West of Old Hwy. 395	County of San Diego	6	EXP	108,000	27,999	0.26	A

Legend:

Class. = Functional Class
Cap. = Capacity
LOS = Level of Service
2-Cd = 2 Lane Light Collector (no median)
EXP = Expressway

Table 1-2: Near Term and Near Term Plus Project Street Segment LOS

Road	Segment	# of Lanes	LOS "E" Capacity	Class.	Near Term			Near Term + Project			ΔV/C
					LOS	Volume	V/C	LOS	Volume	V/C	
Horse Ranch Creek Rd.	South of Stewart Canyon Rd.	2	16,200	2-Cd	C	6,335	0.39	C	6,611	0.41	0.017
	Friesian Wy. to Gold Palomino Wy.	4	30,000	4-C	A	7,174	0.24	A	8,278	0.28	0.037
	Gold Palomino Wy. to Andalusian Wy.	4	30,000	4-C	A	9,674	0.32	A	10,778	0.36	0.037
	North of SR-76	4	30,000	4-C	A	8,615	0.29	A	9,719	0.32	0.037
SR-76	Horse Ranch Creek Rd. to I-15 NB Ramps	6	108,000	EXP	A	14,246	0.13	A	15,281	0.14	0.010
	I-15 NB Ramps to I-15 SB Ramps	6	108,000	EXP	A	25,220	0.23	A	25,979	0.24	0.007
	I-15 SB Ramps to Old Hwy. 395	6	108,000	EXP	A	35,886	0.33	B	36,093	0.33	0.002
	West of Old Hwy. 395	6	108,000	EXP	A	29,795	0.28	A	30,002	0.28	0.002

Legend:

LOS= Level of Service

V/C= Volume to Capacity Ratio

ΔV/C= Change in V/C ratio

2-Cd = 2 Lane Light Collector (no median)

EXP = Expressway

4-C = 4 Lane Blvd. with Raised Median

Table 1-3: Year 2035 and Year 2035 Plus Project Street Segment LOS

Road	Segment	# of Lanes	LOS "E" Capacity	Class.	Year 2035			Year 2035 + Project			ΔV/C
					LOS	Volume	V/C	LOS	Volume	V/C	
Horse Ranch Creek Rd.	South of Stewart Canyon Rd.	2	16,200	2-Cd	D	7,211	0.45	D	7,487	0.46	0.017
	Friesian Wy. to Gold Palomino Wy.	4	30,000	4-C	A	7,976	0.27	A	9,080	0.30	0.037
	Gold Palomino Wy. to Andalusian Wy.	4	30,000	4-C	A	10,789	0.36	A	11,893	0.40	0.037
	North of SR-76	4	30,000	4-C	A	10,011	0.33	A	11,115	0.37	0.037
SR-76	Horse Ranch Creek Rd. to I-15 NB Ramps	6	108,000	EXP	A	17,272	0.16	A	18,307	0.17	0.010
	I-15 NB Ramps to I-15 SB Ramps	6	108,000	EXP	A	30,683	0.28	A	31,442	0.29	0.007
	I-15 SB Ramps to Old Hwy. 395	6	108,000	EXP	B	36,354	0.34	B	36,561	0.34	0.002
	West of Old Hwy. 395	6	108,000	EXP	B	36,378	0.34	B	36,585	0.34	0.002

Legend:

LOS= Level of Service

V/C= Volume to Capacity Ratio

ΔV/C= Change in V/C ratio

2-Cd = 2 Lane Light Collector (no median)

EXP = Expressway

4-C = 4 Lane Blvd. with Raised Median

Table 1-4: Existing Intersection LOS

Number	Intersection	Control	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	SR-76 / Horse Ranch Creek Road	Signalized	39.5	D	37.1	D
2	SR-76 / I-15 NB Ramps	Signalized	10.2	B	13.2	B
3	SR-76 / I-15 SB Ramps	Signalized	25.3	C	14.7	B
4	SR-76 / Olde Highway 395	Signalized	36.8	D	33.4	C
5	Horse Ranch Creek Road / Stewart Canyon Road	Unsignalized	8.8	A	9.0	A
6	Friesian Way / Horse Ranch Creek Road	Unsignalized	9.6	A	9.9	A
7	Gold Palomino Way / Horse Ranch Creek Road	Unsignalized	10.0	B	10.3	B
8	Andalusian Way / Horse Ranch Creek Road	Unsignalized	10.0	B	10.0	B

Notes:

Delay = seconds

LOS = Level of Service

Table 1-5: Near Term and Near Term Plus Project Intersection LOS

#	Intersection	Near Term				Near Term + Project							
		AM Peak Hour		PM Peak Hour		AM Peak Hour		Δ	I ?	PM Peak Hour		Δ	I ?
		D	LOS	D	LOS	D	LOS			D	LOS		
1	SR-76 / Horse Ranch Creek Road	41.1	D	46.9	D	41.5	D	0.4	No	52.5	D	5.6	No
2	SR-76 / I-15 NB Ramps	11.5	B	20.2	C	11.6	B	0.1	No	20.2	C	0.0	No
3	SR-76 / I-15 SB Ramps	34.5	C	45.1	D	37.7	D	3.2	No	45.9	D	0.8	No
4	SR-76 / Olde Highway 395	46.4	D	43.5	D	46.5	D	0.1	No	43.6	D	0.1	No
5	Horse Ranch Creek Road / Stewart Canyon Road	8.8	A	11.7	B	10.3	B	1.5	No	12.0	B	0.3	No
6	Friesian Way / Horse Ranch Creek Road	9.1	A	13.9	B	14.1	B	5.0	No	14.6	B	0.7	No
7	Gold Palomino Way / Horse Ranch Creek Road	7.4	A	14.7	B	15.3	B	7.9	No	14.7	B	0.0	No
8	Andalusian Way / Horse Ranch Creek Road	6.3	A	7.0	A	6.2	A	-0.1	No	7.0	A	0.0	No

Notes:

LOS = Level of Service

Δ = Change

I = Improvement Needed

D= Delay

Table 1-6: Year 2035 and Year 2035 Plus Project Intersection LOS

#	Intersection	Year 2035				Year 2035 + Project							
		AM Peak Hour		PM Peak Hour		AM Peak Hour		Δ	I?	PM Peak Hour		Δ	I?
		D	LOS	D	LOS	D	LOS			D	LOS		
1	SR-76 / Horse Ranch Creek Road	44.9	D	40.1	D	45.2	D	0.3	No	44.0	D	3.9	No
2	SR-76 / I-15 NB Ramps	13.3	B	43.7	D	13.2	B	-0.1	No	43.0	D	-0.7	No
3	SR-76 / I-15 SB Ramps	47.1	D	46.9	D	51.1	D	4.0	No	49.0	D	2.1	No
4	SR-76 / Olde Highway 395	70.6	E	73.3	E	71.5	E	0.9	No	74.5	E	1.2	No
5	Horse Ranch Creek Road / Stewart Canyon Road	10.6	B	12.7	B	10.7	B	0.1	No	13.1	B	0.4	No
6	Friesian Way / Horse Ranch Creek Road	13.8	B	14.4	B	14.5	B	0.7	No	15.1	B	0.7	No
7	Gold Palomino Way / Horse Ranch Creek Road	15.6	B	15.3	B	15.9	B	0.3	No	15.4	B	0.1	No
8	Andalusian Way / Horse Ranch Creek Road	6.4	A	7.1	A	6.4	A	0.0	No	7.1	A	0.0	No

Notes:

LOS = Level of Service

Δ = Change

I = Improvement Needed

D= Delay

Based on the studied street segment and intersection analysis, no deficiencies were identified due to the addition of the proposed project therefore no improvements will be required based on the analysis.

2.0 INTRODUCTION

2.1 Purpose of Report & Study Objectives

Urban Systems Associates Inc. (USAI) has prepared this Local Mobility Analysis (LMA) report. The purpose of this Local Mobility Analysis (LMA) is to evaluate the effects the proposed Passerelle residential project will have on its surrounding local transportation network in the County of San Diego. Although no longer constituting the basis for transportation impacts under CEQA, the County's General Plan identifies LOS as being a required analysis, and will continue to be analyzed as part of project review.

The LMA analyzes the following conditions for a Level of Service (LOS) of nearby intersections and street segments for potential deficiencies due to the addition of project traffic.

- Existing Conditions
- Opening Year 2024 Near Term Conditions
- Opening Year 2024 Near Term Plus Project Conditions
- Horizon Year 2035 Conditions
- Horizon Year 2035 Plus Project Conditions

2.2 Site Location and Study Area

The proposed project is located in the County of San Diego along Horse Ranch Creek Road just north of the SR-76 and east of the I-15. The project site is located directly east of I-15, approximately 0.1-mile, east of Horse Ranch Creek Road, and approximately 1.6 miles north of SR-76. Parcel 1 is bound to the west by Horse Ranch Creek Road, to the east by Jaeger Street and to the south by Friesian Way. Parcel 2 is bound to the north by Friesian Way and to the west by Horse

Ranch Creek Road. Following the County of San Diego Transportation Study Guidelines, the study area includes the following intersections:

Intersections

1. SR-76 / Horse Ranch Creek Road
2. SR-76 / I-15 NB Ramps
3. SR-76 / I-15 SB Ramps
4. SR-76 / Olde Highway 395
5. Horse Ranch Creek Road / Stewart Canyon Road
6. Horse Ranch Creek Road / Friesian Way
7. Horse Ranch Creek Road / Gold Palomino Way
8. Horse Ranch Creek Road / Andalusian Way

A map of the study area is shown on **Figure 2-1**.

2.3 Project Description

The proposed project is located within the originally approved mixed- use master planned community known as the "Campus Park project." A Specific Plan Amendment (SPA) and General Plan Amendment (GPA) were approved for the Campus Park project on May 11, 2011, amending the previous Hewlett-Packard Campus Park Specific Plan of 1983 and the County of San Diego General Plan. The Environmental Impact Report (State Clearinghouse No. 2005011092), "Campus Park EIR", was certified by the County of San Diego Board of Supervisors on May 11, 2011 for the Campus Park project. The project will amend the Campus Park project to allow for the development of 138 single family detached dwelling units on two parcels (Parcels 1 and Paracel 2) for a total of 11.5 acres in the County of San Diego. The project site was originally entitled for 157,000 square feet of professional office use based on the *Campus Park Traffic Impact Study*

dated February 19, 2009. The project will provide access to Parcel 1 through Jaeger Street and Friesian Way for Parcel 2.

Figure 2-1: Study Area

2.4 Existing Entitlements Background

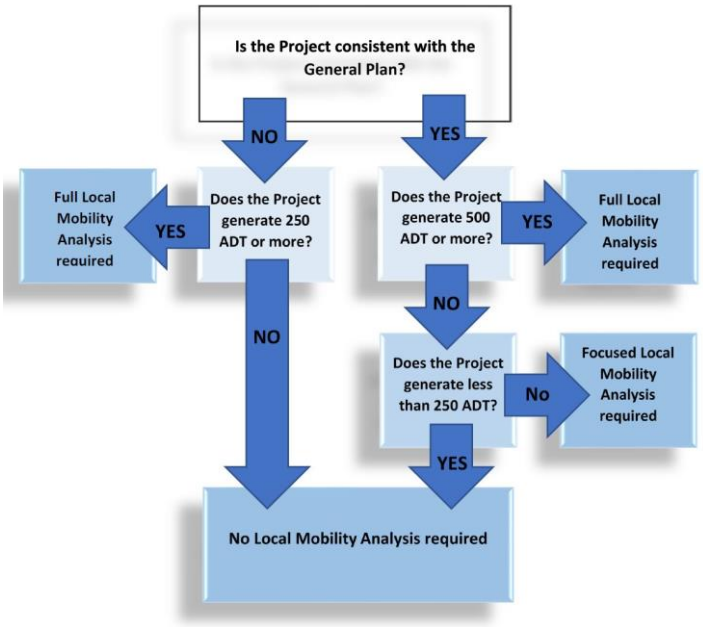
The original entitlement, the Campus Park Project included 157,000 square feet of professional office use on the proposed project's location. The Traffic Impact Analysis (TIA) for the Campus Park Project is provided in **Appendix G** of this report. The Trip Generation for the original entitlement professional office use was 2,669 average daily trips with 347 AM and 374 PM peak hour trips.

3.0 ANALYSIS METHODOLOGY

This section of the LMA consists of the methodologies used to conduct analysis. The *County of San Diego Transportation Study Guidelines* dated June 2020 was referred to for the preparation of this LMA.

3.1 Determining Local Mobility Analysis Type

The figure below was referenced to determine the type of LMA that is required for the proposed project.



The proposed project requires an amendment to the Fallbrook Community Plan, and generates 1,380 Average Daily Trips, therefore a Full Local Mobility Analysis is required based on the flowchart above.

3.2 Intersection Analysis Methodology

The County of San Diego follows the Highway Capacity Manual (HCM) to analyze signalized and unsignalized intersections for a performance level of service (LOS). The procedure in Chapter 19, which is used to analyze signalized intersections, is the "operational method." This method determines LOS based on average control delay expressed in seconds. **Table 3-1** shows the LOS based upon delay. A computer program called Synchro 10 supports this methodology and is used to complete the analysis for signalized and unsignalized intersections. The intersection analysis includes pedestrian and bike volumes based on actual count data obtained in the field.

Table 3-1: LOS Criteria for Intersections

Signalized Intersections

Control Delay (s/veh)	LOS by Volume-to-Capacity Ratio	
	≤ 1.0	> 1.0
≤ 10	A	F
> 10-20	B	F
> 20-35	C	F
> 35-55	D	F
> 55-80	E	F
≥ 80.1	F	F

Source: HCM 6th Edition, Transportation Research Board 2016, Exhibit 19-8

Two-Way Stop-Controlled Intersections (1)(2)

Control Delay (s/veh)	LOS by Volume-to-Capacity Ratio	
	v/c ≤ 1.0	v/c > 1.0
0-10	A	F
> 10-15	B	F
> 15-25	C	F
> 25-35	D	F
> 35-50	E	F
≥ 50.1	F	F

Source: HCM 6th Edition, Transportation Research Board 2016, Exhibit 20-2

Note:

1) The LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for major-street approaches or for the intersection as a whole.

2) The intersection worst approach delay is the reported delay for TWSC intersections. Note that it its important to consider measures of effectiveness such as V/C ratios, average queue lengths, and 95th percentile queue lengths in addition to considering delay.

3.3 Street Segment Analysis Methodology

When analyzing street segments for a Level of Service, the roadway capacities shown on **Table 3-2** were followed as provided by the County of San Diego Public Road Standards, dated March 2012.

TABLE 1
AVERAGE DAILY VEHICLE TRIPS*

MOBILITY ELEMENT ROADS			LEVELS OF SERVICE				
Road Classification		# of Travel Lanes	A	B	C	D	E
Expressway (6.1)		6	<36,000	<54,000	<70,000	<86,000	<108,000
Prime Arterial (6.2)		6	<22,200	<37,000	<44,600	<50,000	<57,000
Major Road	w/ Raised Median (4.1A)	4	<14,800	<24,700	<29,600	<33,400	<37,000
	w/ Intermittent Turn Lanes (4.1B)	4	<13,700	<22,800	<27,400	<30,800	<34,200
Boulevard	w/ Raised Median (4.2A)	4	<18,000	<21,000	<24,000	<27,000	<30,000
	w/ Intermittent Turn Lanes (4.2B)	4	<16,800	<19,600	<22,500	<25,000	<28,000
Community Collector	w/ Raised Median (2.1A)	2	<10,000	<11,700	<13,400	<15,000	<19,000
	w/ Continuous Left Turn Lane (2.1B)	2	<3,000	<6,000	<9,500	<13,500	<19,000
	w/ Intermittent Turn Lane (2.1C)	2	<3,000	<6,000	<9,500	<13,500	<19,000
	w/ Passing Lane (2.1D)	2	<3,000	<6,000	<9,500	<13,500	<19,000
	No Median (2.1E)	2	<1,900	<4,100	<7,100	<10,900	<16,200
Light Collector	w/ Raised Median (2.2A)	2	<3,000	<6,000	<9,500	<13,500	<19,000
	w/ Continuous Left Turn Lane (2.2B)	2	<3,000	<6,000	<9,500	<13,500	<19,000
	w/ Intermittent Turn Lane (2.2C)	2	<3,000	<6,000	<9,500	<13,500	<19,000
	w/ Passing Lane (2.2D)	2	<3,000	<6,000	<9,500	<13,500	<19,000
	No Median (2.2E)	2	<1,900	<4,100	<7,100	<10,900	<16,200
	w/ Reduced Shoulder (2.2F)	2	<5,800	<6,800	<7,800	<8,700	<9,700
Minor Collector	w/ Raised Median (2.3A)	2	<3,000	<6,000	<7,000	<8,000	<9,000
	w/ Intermittent Turn Lane (2.3B)	2	<3,000	<6,000	<7,000	<8,000	<9,000
	No Median (2.3C)	2	<1,900	<4,100	<6,000	<7,000	<8,000
NON-MOBILITY ELEMENT ROADS**			**LEVELS OF SERVICE**				
Residential Collector		2	-	-	<4,500	-	-
Rural Residential Collector***		2	-	-	<4,500	-	-
Residential Road		2	-	-	<1,500	-	-
Rural Residential Road***		2	-	-	<1,500	-	-
Residential Cul-de-Sac or Loop Road		2	-	-	<200	-	-

* The values shown are subject to adjustment based on the geometry of the roadway, side frictions, and other relevant factors as determined by the Director, Department of Public Works.

** Levels of service are not applied to residential streets since their primary purpose is to serve abutting lots, not carry through traffic. Levels of service normally apply to roads carrying through traffic between major trip generators and attractors.

*** Rural Residential Collectors and Rural Residential Roads are intended to serve areas with lot sizes of 2 acres or more which do not have a demand for on-street parking. On-street parking is not assured for these cross sections. Additional right-of-way is needed if on-street parking is in paved area.

**** See Tables 2A and 2B for roadway surfacing and right-of-way widths.

3.4 Improvement Requirement Thresholds

The County of San Diego has outlined the following criteria for determining if a studied intersection requires an improvement due to the addition of the proposed project's traffic. As it relates to the project's study area, the thresholds are shown below:

An improvement is required at a signalized intersection if any of the following are triggered:

- Consistent with County General Plan Policy, any intersection that is operating at an acceptable LOS or better without project traffic in which the addition of project traffic causes the intersection to degrade to an LOS E or F should identify improvements to improve operations to LOS D or better.
- Any signalized study intersection that is operating at LOS E or F without project traffic where the project increased delay by 5.0 or more seconds should identify improvements to offset the increase in delay.
- If the left turn volume exceeds 100 vehicles per hour, an exclusive left turn lane is recommended.
- If the left turn volume exceeds 150 vehicles per hour and posted speed 45 mph or greater, a protected left turn signal phase is recommended.
- If the left turn volume exceeds 300 vehicles per hour, a second left turn lane is recommended.
- If the right turn volume exceeds 150 vehicles per hour, a dedicated right turn lane is recommended.
- The project causes the 95th percentile queue at a turn lane to exceed the existing turn lane length/storage.

An improvement is required at side street stop unsignalized intersection if:

- The project causes the average intersection delay to be LOS E or F during the peak hour.
- If the worst-case movement is currently operating at LOS E or F:
    - The project adds 5 or more seconds of *overall intersection*.

      AND

    - The project adds ten (10) or more trips to the worst-case movement OR 50 or more trips to the overall intersection.
- The intersection meets the peak hour traffic signal warrants after the addition of project traffic per the *California Manual on Uniform Traffic Control Devices* (CA MUTCD–latest edition). An investigation of the need for a traffic control signal may also include an analysis of factors related to the existing operations and safety at a study intersection and the potential to improve these conditions. A warrant analysis is not required for right turn in/right turn out only intersections or driveways that are physically restricted by raised center median.

4.0 EXISTING CONDITIONS

To analyze the existing conditions, count data was obtained on Tuesday March 2, 2020 on the following intersections:

1. Horse Ranch Creek Road / Stewart Canyon Road
2. Horse Ranch Creek Road / Friesian Way
3. Horse Ranch Creek Road / Gold Palomino Way
4. Horse Ranch Creek Road / Andalusian Way

The volumes for the following intersections were obtained from the 2009 Campus Park Project TIA and a growth factor was applied to determine the existing baseline volumes, the following intersections are:

1. SR-76 / Horse Ranch Creek Road
2. SR-76 / I-15 NB Ramps
3. SR-76 / I-15 SB Ramps
4. SR-76 / Olde Highway 395

For intersections along the SR-76, a growth factor was determined by comparing counts from the 2009 report and volumes obtained from Caltrans and calculating the growth per year. This was then extrapolated to 2021 from the base year of the counts obtained from the 2009 Campus Park TIA. A 2.88% growth per year factor was calculated and applied to all intersection movements and street segment ADT. The traffic count data and growth factor calculations are provided in **Appendix A** of this report.

The existing road facilities are described in detail below:

SR-76- from Olde Highway 395 to Horse Ranch Creek Road is a 6-lane expressway with a capacity of 108,000 ADT. SR-76 is an east-west direction expressway with a posted speed limit of 55 mph. There are double yellow centerlines dividing the opposing traveling vehicles throughout the segments. Sidewalks are provided on the northern and southern portions of SR-76 only from Olde Highway 395 to I-15 SB Ramps.

Horse Ranch Creek Road- from Stewart Canyon Road to SR-76 is a 2-lane light collector with no median and a capacity of 16,200 ADT. Horse Ranch Creek Road is a north-south direction collector. A double yellow centerline divides the opposing traveling vehicles throughout the roadway. No sidewalks are currently present along the studied segments on Horse Ranch Creek Road.

Friesian Way- east of Horse Ranch Creek Road is a 2-lane road with no median. Friesian Way is an east-west road. A double yellow centerline divides the opposing traveling vehicles throughout the roadway. Sidewalks are present along the north and south side of the road.

Jaeger Street- north of Friesian Way is a 2-lane road with no median. Jaeger Street is a north-south road. No centerline currently exists along the road. Sidewalks are present along the west and east side of the road.

4.1 Intersection Analysis

The existing peak hour traffic volumes at the studied intersections are shown on **Figure 4-1**. The average delay and level of service for the intersections in the AM and PM peak hour were analyzed using a software package called Synchro 10, which is an application of the Highway Capacity Manual methodology. The existing intersection lane configurations are shown on **Figure 4-2.**

Figure 4-1: Existing AM and PM Turning Movement Volumes

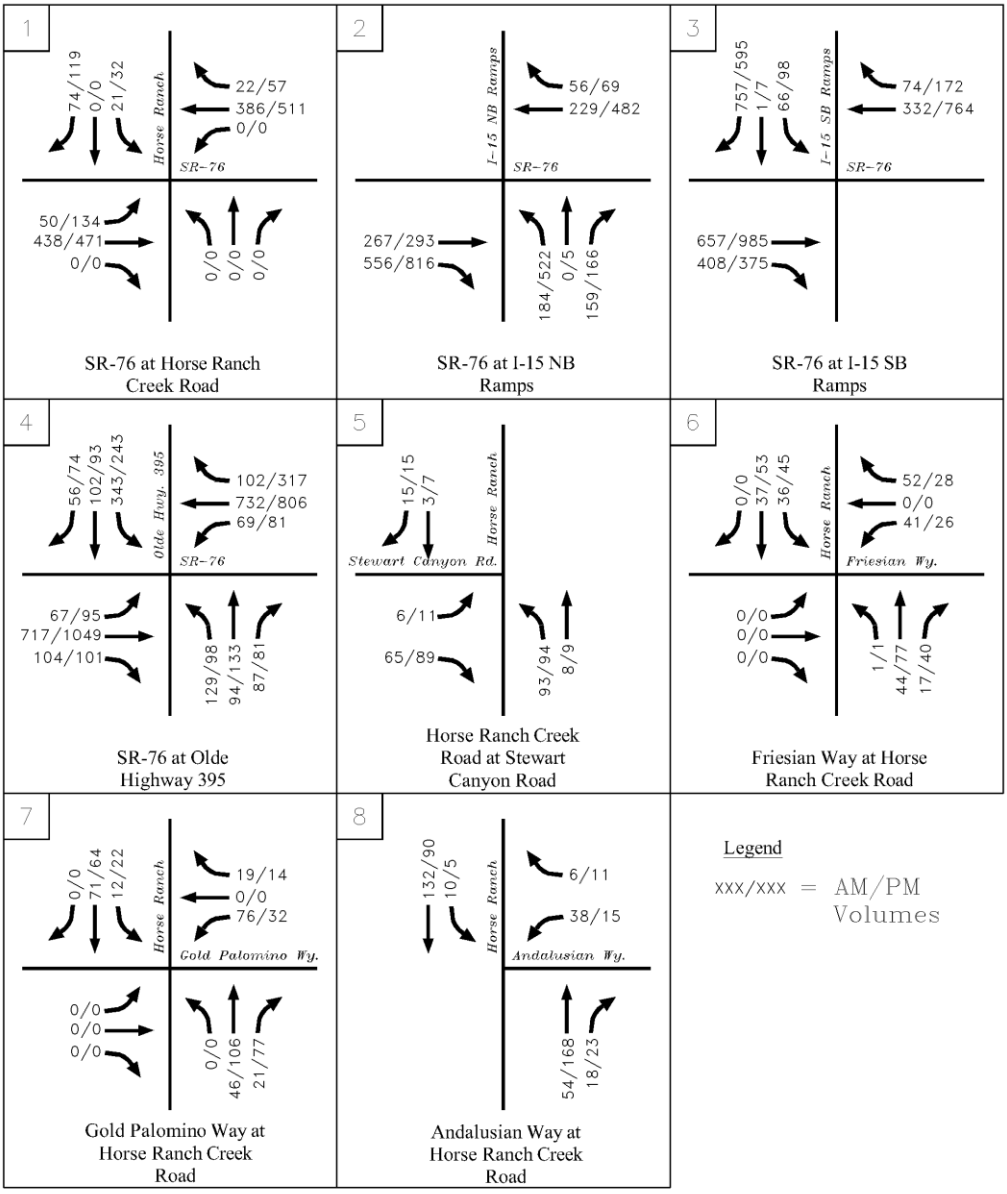
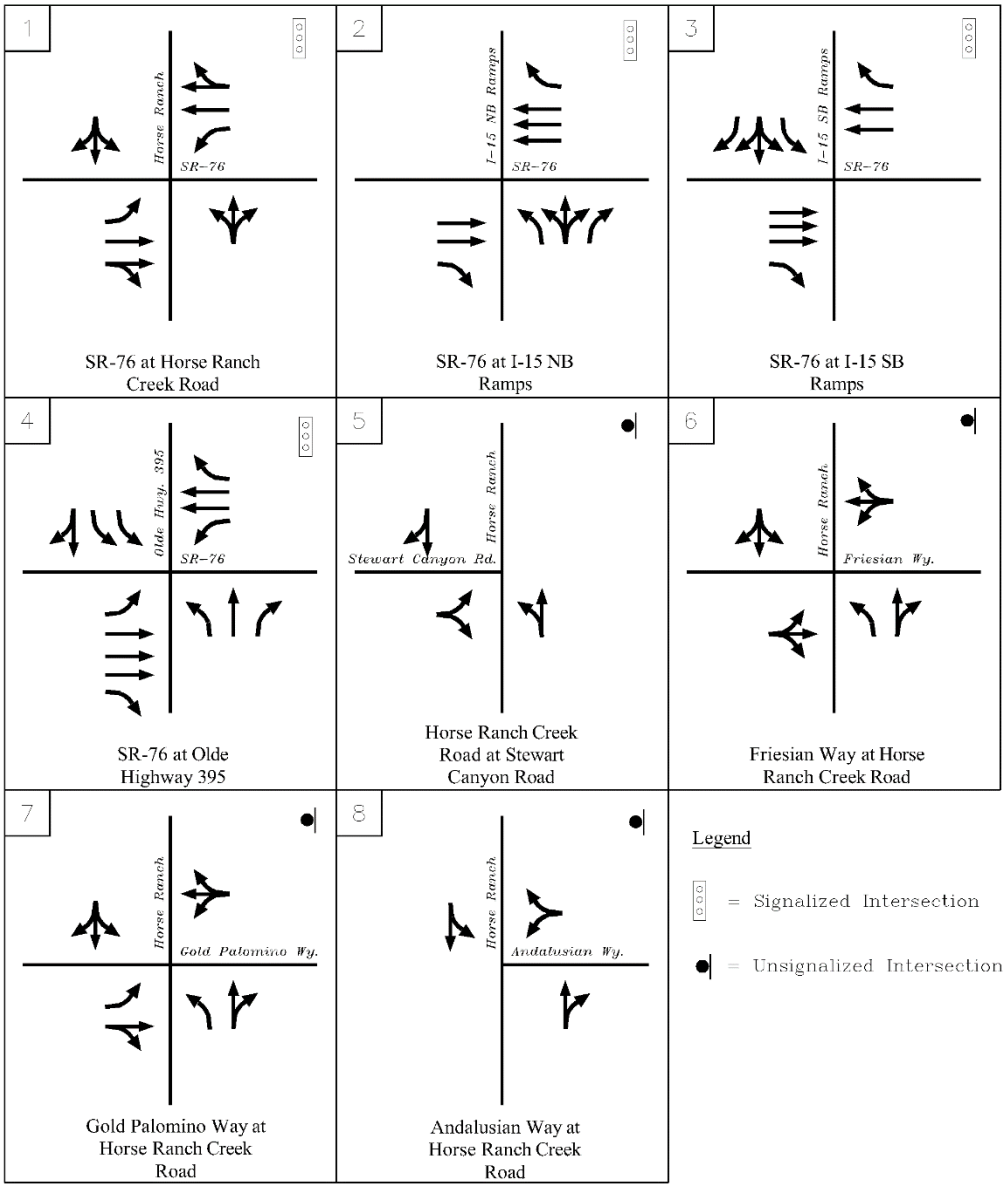


Figure 4-2: Existing Intersection Lane Configurations



The existing conditions intersection analysis is shown on **Table 4-1**.

Table 4-1: Existing Intersection Analysis

Number	Intersection	Control	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	SR-76 / Horse Ranch Creek Road	Signalized	39.5	D	37.1	D
2	SR-76 / I-15 NB Ramps	Signalized	10.2	B	13.2	B
3	SR-76 / I-15 SB Ramps	Signalized	25.3	C	14.7	B
4	SR-76 / Olde Highway 395	Signalized	36.8	D	33.4	C
5	Horse Ranch Creek Road / Stewart Canyon Road	Unsignalized	8.8	A	9.0	A
6	Friesian Way / Horse Ranch Creek Road	Unsignalized	9.6	A	9.9	A
7	Gold Palomino Way / Horse Ranch Creek Road	Unsignalized	10.0	B	10.3	B
8	Andalusian Way / Horse Ranch Creek Road	Unsignalized	10.0	B	10.0	B

Notes:

Delay = seconds

LOS = Level of Service

As shown on Table 4-1, in the existing intersection scenario, all studied intersections will operate at an acceptable level of service D or better in both the AM and PM peak hour.

The synchro worksheets for the existing conditions are provided in **Appendix B**.

4.2 Street Segment Analysis

Figure 4-3 shows the Existing ADT.

Table 4-2 shows the Existing street segment analysis.

Figure 4-3: Existing ADT

Table 4-2: Existing Street Segment Analysis

Road	Segment	Standard	# of Ln.	Class.	Cap.	Volume	V/C	LOS
Horse Ranch Creek Rd.	South of Stewart Canyon Rd.	County of San Diego	2	2-Cd	16,200	2,177	0.13	B
	Friesian Wy. to Gold Palomino Wy.	County of San Diego	2	2-Cd	16,200	1,992	0.12	B
	Gold Palomino Wy. to Andalusian Wy.	County of San Diego	2	2-Cd	16,200	2,769	0.17	B
	North of SR-76	County of San Diego	2	2-Cd	16,200	3,469	0.21	B
SR-76	Horse Ranch Creek Rd. to I-15 NB Ramps	County of San Diego	6	EXP	108,000	13,421	0.12	A
	I-15 NB Ramps to I-15 SB Ramps	County of San Diego	6	EXP	108,000	23,730	0.22	A
	I-15 SB Ramps to Old Hwy. 395	County of San Diego	6	EXP	108,000	33,766	0.31	A
	West of Old Hwy. 395	County of San Diego	6	EXP	108,000	27,999	0.26	A

Legend:

Class. = Functional Class
Cap. = Capacity
LOS = Level of Service
2-Cd = 2 Lane Light Collector (no median)
EXP = Expressway

As shown on Table 5-2, all studied street segments are operating at an acceptable level of service D in the Existing conditions.

5.0 PROPOSED PROJECT

The project proposes to revise the current designation of Parcels 1 and 2 from professional office use to single-family residential use and would include the development of 138 single family detached dwelling units.

5.1 Project Trip Generation

The project trip generation is shown on **Table 5-1**. The trip generation was determined based on the project's land use and the most recent rates obtained from the SANDAG (Not so) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region, April 2002. The existing entitlements for the project site was also factored into the net total trip generation. The existing entitlements allows for professional office uses, as obtained from the Campus Park TIA dated February 19, 2009.

As shown on Table 5-1, the total net decrease trip generation for the proposed project is calculated to be -1,289 ADT with -237 AM (-279 in / 43 out) peak hour trips and -236 PM (40 in / -257 out) peak hour trips. However the proposed project trip generation was used in the analysis in this report. The proposed project trip generation is **1,380** ADT with **110** AM (**33** in / **77** out) peak hour trips and **138** PM (**97** in / **41** out) peak hour trips.

Table 5-2: Project Trip Generation

Land Use	Intensity	Rate*	ADT	AM						PM					
				Peak %*	Vol.	In %	Out%	In	Out	Peak %*	Vol.	In %	Out%	In	Out
Previous Entitlement															
Professional Office	157 KSF	17 /KSF	2,669	13%	347	90% : 10%		312	35	14%	374	20% : 80%		75	298
Proposed New Land Use															
Single Family Detached	138 units	10 /unit	1,380	8%	110	30% : 70%		33	77	10%	138	70% : 30%		97	41
Net Change of Trip Generation															
Net Total			-1,289		-237			-279	+43		-236			+40	-257
% Change from Professional Office use to Single Family Detached use															
Net % Change			-48%		-68%			-89%	+234%		-63%			+54%	-86%

Source:

*Rates are used taken from SANDAG "(Not so) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region", April 2002.

Previous Entitlement Trip Generation obtained from the Campus Park (TM 5335) Traffic Impact Study, dated February 19, 2009.

Note:

ADT= Average Daily Trips

KSF = 1,000 Square Feet

Unit = Dwelling Unit

5.2 Project Trip Distribution and Assignment

Figure 5-1 shows the project trip distribution. **Figure 5-2** shows the project trip assignment to the studied intersections. **Figure 5-3** shows the project ADT distribution.

The project trip distribution was determined by USAI based on existing traffic counts, knowledge of the area, and engineering judgement. As shown on Figure 5-1, 80% of project traffic is expected to travel to and from the SR-76 while 20% will travel north towards Stewart Canyon Road. Along the SR-76, 20% of project traffic is expected to travel to and from the I-15 North and 40% will travel to and from the I-15 South, and 15% will travel to and from west of the SR-76.

Figure 5-1: Project Trip Distribution

Figure 5-2: Project Trip Assignment

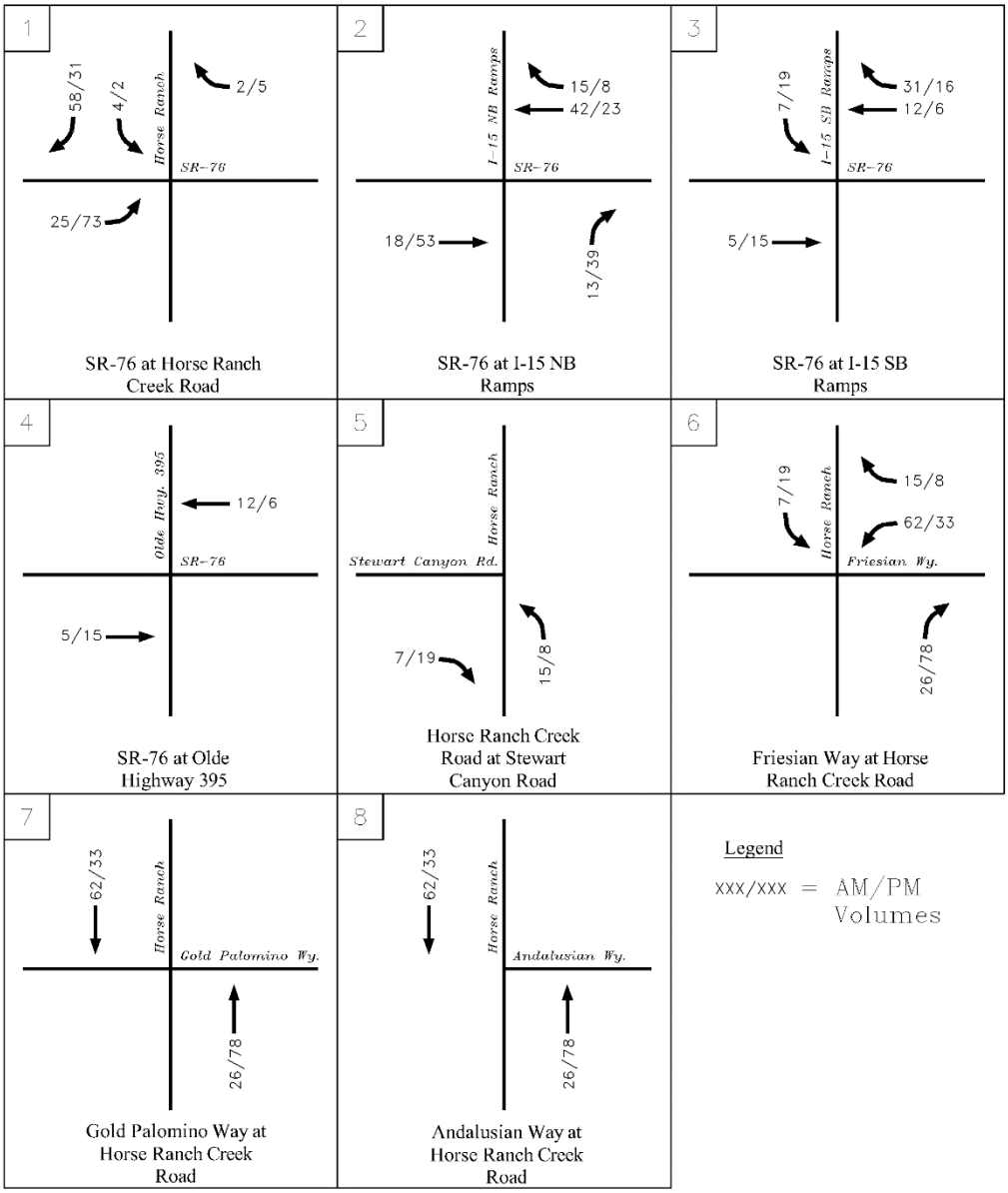


Figure 5-3: Project ADT

6.0 CUMULATIVE PROJECTS

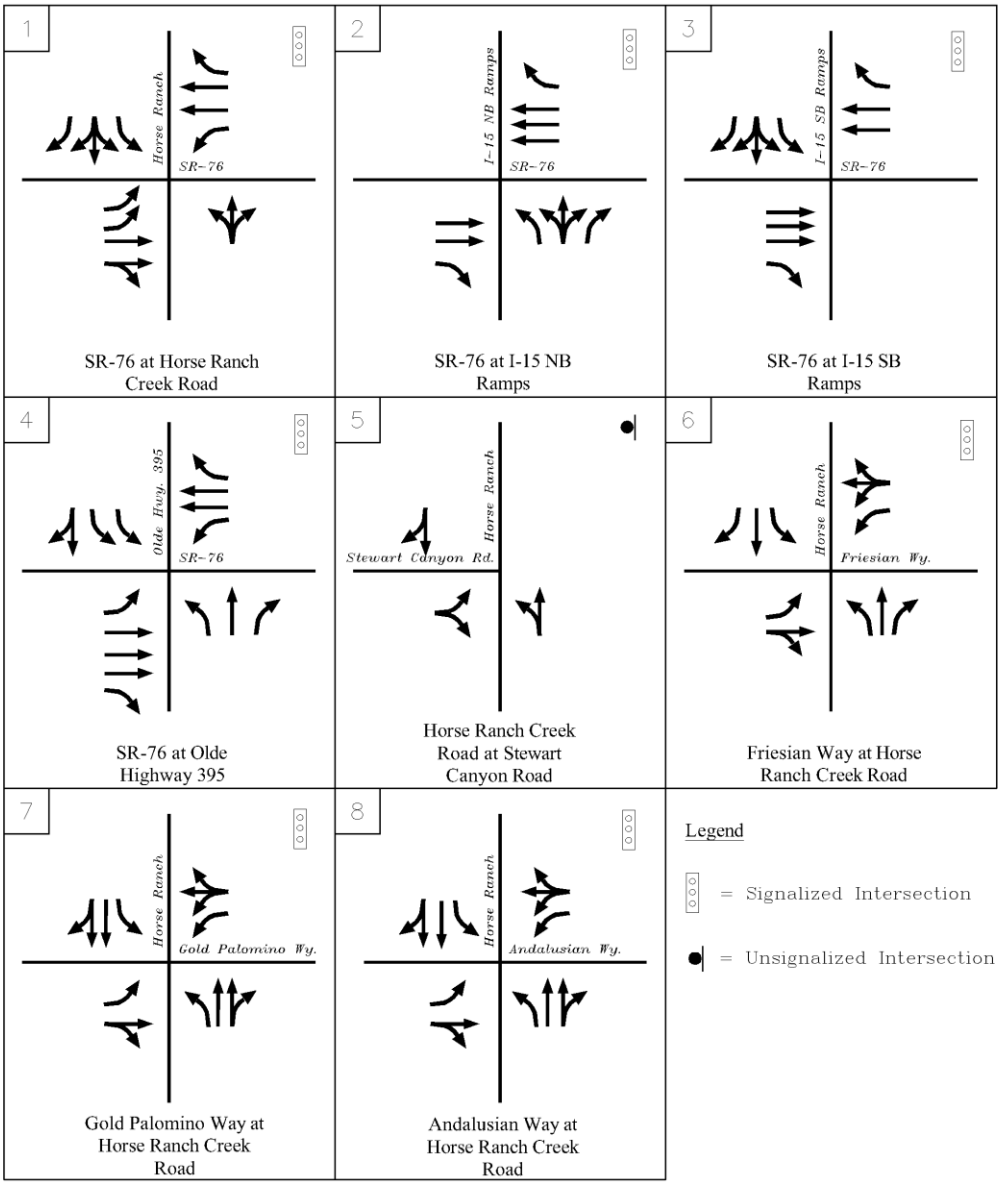
The 2009 Campus Park TIA was referenced to obtain the cumulative projects needed to determine the Near Term Opening Year volumes. As a conservative approach, the cumulative project volumes were obtained and used in this analysis. The cumulative project volumes were determined based on a Sandag Year 2030 model that included all cumulative projects that were consistent with the current land use plan at the time. The cumulative project volumes in the 2009 Campus Park TIA accounts for 95 projects that were expected to generate traffic and use the nearby roads and intersections in the study area. The near term analysis in this LMA will use the cumulative project volumes from the 2009 report as a conservative approach. The Campus Park TIA is provided in **Appendix G**.

7.0 NEAR TERM OPENING YEAR 2024

Analysis was done in Near Term Opening Year 2024 conditions to determine if a significant deficiency would occur due to the addition of project traffic to the surrounding study area. The volumes used in this condition are based on the existing baseline volumes plus the cumulative project volumes plus a 2.88% growth factor per year (up to Year 2024).

Additionally it was assumed that roadway and intersection improvements would be complete by Opening Year 2024. Figure 7-1 shows the Near Term Lane configurations used in this analysis for the Near Term conditions. Intersections 6-8 have become signalized intersections with additional lanes, intersection 1 has improved to have additional lanes, and Horse Ranch Creek Road has increased from a 2-lane road to a 4-lane road.

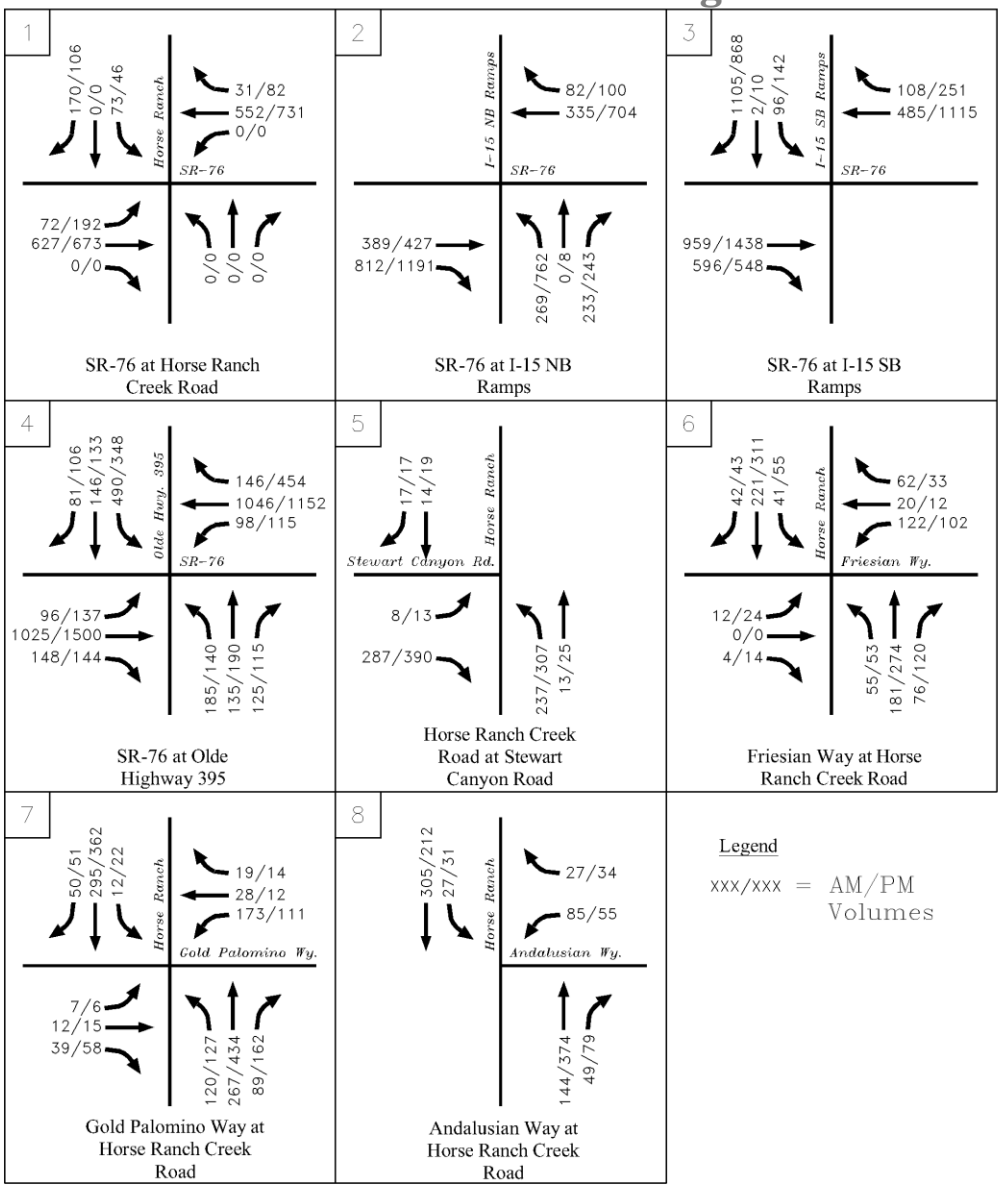
Figure 7-1: Near Term Lane Configurations



7.1 Intersection Analysis

The Near Term peak hour traffic volumes at the studied intersections are shown on **Figure 7-2**.

Figure 7-2: Near Term AM and PM Turning Movement Counts



The Near Term intersection analysis is shown on **Table 7-1**.

Table 7-1: Near Term Intersection Analysis

Number	Intersection	Control	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	SR-76 / Horse Ranch Creek Road	Signalized	41.1	D	46.9	D
2	SR-76 / I-15 NB Ramps	Signalized	11.5	B	20.2	C
3	SR-76 / I-15 SB Ramps	Signalized	34.5	C	45.1	D
4	SR-76 / Olde Highway 395	Signalized	46.4	D	43.5	D
5	Horse Ranch Creek Road / Stewart Canyon Road	Unsignalized	8.8	A	11.7	B
6	Friesian Way / Horse Ranch Creek Road	Unsignalized	9.1	A	13.9	B
7	Gold Palomino Way / Horse Ranch Creek Road	Unsignalized	7.4	A	14.7	B
8	Andalusian Way / Horse Ranch Creek Road	Unsignalized	6.3	A	7.0	A

Notes:

Delay = seconds per vehicle

LOS = Level of Service

As shown on Table 7-1, all studied intersections will operate at an acceptable level of service D or better in both the AM and PM peak hour.

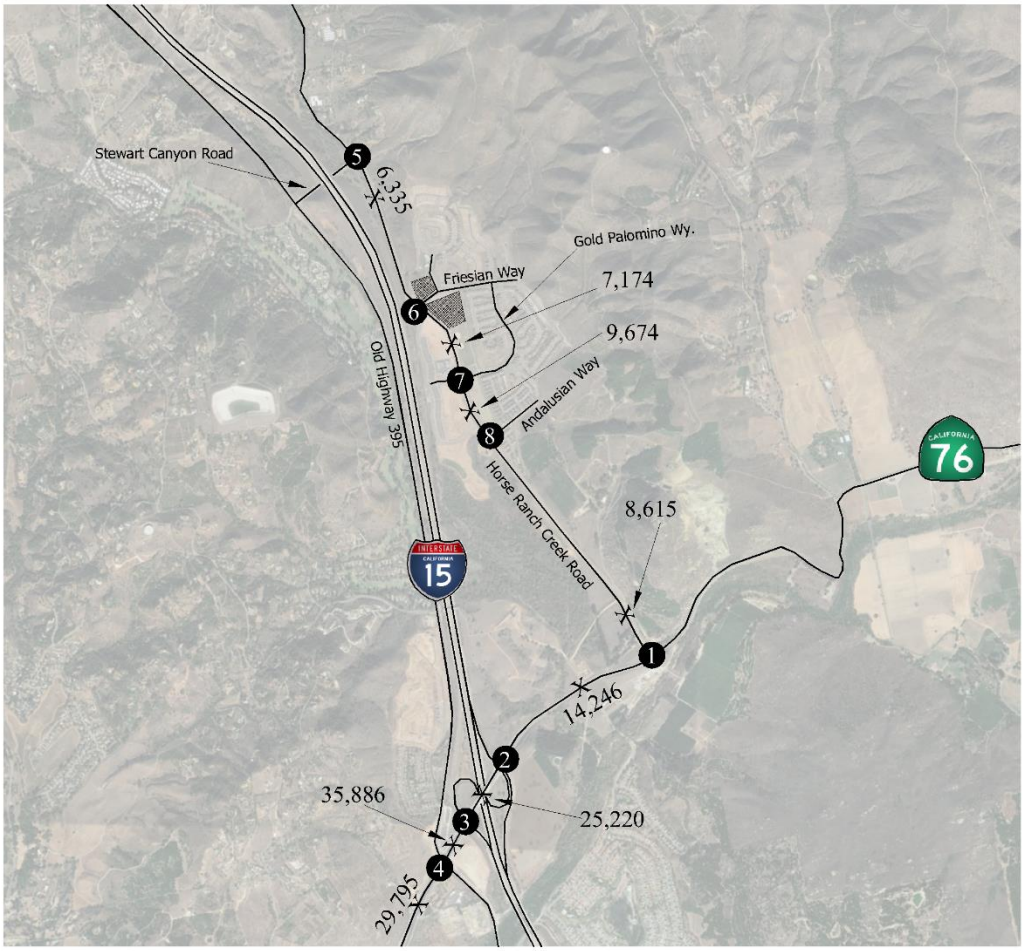
The synchro worksheets for the Near Term conditions are provided in **Appendix C**.

7.2 Street Segment Analysis

Figure 7-3 shows the Near Term ADT.

Table 7-2 shows the Near Term street segment analysis.

Figure 7-3: Near Term ADT



Legend

(#) = Studied Intersection Location

X = Studied Street Segment

= Project Location

XX,XXX = ADT Number

N
NO SCALE

Table 7-2: Near Term Street Segment Analysis

Road	Segment	Standard	# of Ln.	Class.	Cap.	Volume	V/C	LOS
Horse Ranch Creek Rd.	South of Stewart Canyon Rd.	County of San Diego	2	2-Cd	16,200	6,335	0.39	C
	Friesian Wy. to Gold Palomino Wy.	County of San Diego	4	4-C	30,000	7,174	0.24	A
	Gold Palomino Wy. to Andalusian Wy.	County of San Diego	4	4-C	30,000	9,674	0.32	A
	North of SR-76	County of San Diego	4	4-C	30,000	8,615	0.29	A
SR-76	Horse Ranch Creek Rd. to I-15 NB Ramps	County of San Diego	6	EXP	108,000	14,246	0.13	A
	I-15 NB Ramps to I-15 SB Ramps	County of San Diego	6	EXP	108,000	25,220	0.23	A
	I-15 SB Ramps to Old Hwy. 395	County of San Diego	6	EXP	108,000	35,886	0.33	A
	West of Old Hwy. 395	County of San Diego	6	EXP	108,000	29,795	0.28	A

Legend:

Class. = Functional Class

Cap. = Capacity

LOS = Level of Service

4-C = 4 Lane Blvd. with Raised Median

EXP = Expressway

2-Cd = 2 Lane Light Collector (no median)

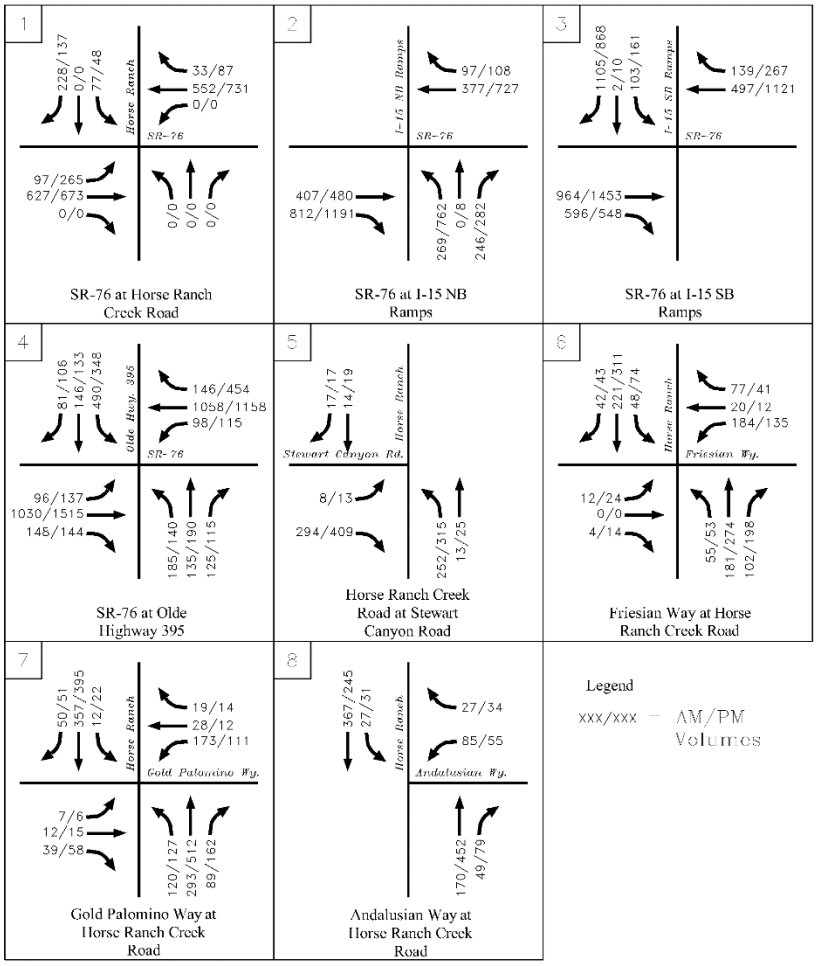
As shown on Table 7-2, the studied street segments are operating at an acceptable level of service C or better in the Near Term conditions.

8.0 NEAR TERM OPENING YEAR 2024 PLUS PROJECT

8.1 Intersection Analysis

The Near Term Plus Project peak hour traffic volumes at the studied intersections are shown on **Figure 8-1**.

Figure 8-1: Near Term Plus Project AM and PM Turning Movement Counts



The Near Term Plus Project intersection analysis is shown on **Table 8-1**.

Table 8-1: Near Term Plus Project Intersection Analysis

Number	Intersection	Control	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	SR-76 / Horse Ranch Creek Road	Signalized	41.5	D	52.5	D
2	SR-76 / I-15 NB Ramps	Signalized	11.6	B	20.2	C
3	SR-76 / I-15 SB Ramps	Signalized	37.7	D	45.9	D
4	SR-76 / Olde Highway 395	Signalized	46.5	D	43.6	D
5	Horse Ranch Creek Road / Stewart Canyon Road	Unsignalized	10.3	B	12	B
6	Friesian Way / Horse Ranch Creek Road	Unsignalized	14.1	B	14.6	B
7	Gold Palomino Way / Horse Ranch Creek Road	Unsignalized	15.3	B	14.7	B
8	Andalusian Way / Horse Ranch Creek Road	Unsignalized	6.2	A	7	A

Notes:

LOS = Level of Service

Delay = seconds per vehicle

As shown on Table 8-1, all studied intersections will operate at an acceptable level of service D or better in both the AM and PM peak hour.

The synchro worksheets for the Near Term Plus Project conditions are provided in **Appendix D**.

Table 8-2 shows the Near Term with and without Project intersection comparison to determine if an improvement is required.

Table 8-2: Near Term and Near Term Plus Project Intersection Comparisons

#	Intersection	Near Term				Near Term + Project							
		AM Peak Hour		PM Peak Hour		AM Peak Hour		Δ	I ?	PM Peak Hour		Δ	I ?
		D	LOS	D	LOS	D	LOS			D	LOS		
1	SR-76 / Horse Ranch Creek Road	41.1	D	46.9	D	41.5	D	0.4	No	52.5	D	5.6	No
2	SR-76 / I-15 NB Ramps	11.5	B	20.2	C	11.6	B	0.1	No	20.2	C	0.0	No
3	SR-76 / I-15 SB Ramps	34.5	C	45.1	D	37.7	D	3.2	No	45.9	D	0.8	No
4	SR-76 / Olde Highway 395	46.4	D	43.5	D	46.5	D	0.1	No	43.6	D	0.1	No
5	Horse Ranch Creek Road / Stewart Canyon Road	8.8	A	11.7	B	10.3	B	1.5	No	12.0	B	0.3	No
6	Friesian Way / Horse Ranch Creek Road	9.1	A	13.9	B	14.1	B	5.0	No	14.6	B	0.7	No
7	Gold Palomino Way / Horse Ranch Creek Road	7.4	A	14.7	B	15.3	B	7.9	No	14.7	B	0.0	No
8	Andalusian Way / Horse Ranch Creek Road	6.3	A	7.0	A	6.2	A	-0.1	No	7.0	A	0.0	No

Notes:

LOS = Level of Service

Δ = Change

I = Improvement Needed

D= Delay

As shown on Table 8-2, no improvements are needed because the intersections have an acceptable LOS of D or better in the with and without project conditions. Also for intersections that have an unacceptable LOS E or worse, the change in delay is below the threshold of 5.0 seconds or more to require an improvement.

8.2 Street Segment Analysis

Figure 8-2 shows the Near Term Plus Project ADT.

Table 8-3 shows the Near Term Plus Project street segment analysis.

Figure 8-2: Near Term Plus Project ADT

Table 8-3: Near Term Plus Project Street Segment Analysis

Road	Segment	Standard	# of Ln.	Class.	Cap.	Volume	V/C	LOS
Horse Ranch Creek	South of Stewart Canyon Rd.	County of San Diego	2	2-Cd	16,200	6,611	0.41	C
	Friesian Wy. to Gold Palomino Wy.	County of San Diego	4	4-C	30,000	8,278	0.28	A
	Gold Palomino Wy. to Andalusian Wy.	County of San Diego	4	4-C	30,000	10,778	0.36	A
	North of SR-76	County of San Diego	4	4-C	30,000	9,719	0.32	A
SR-76	Horse Ranch Creek Rd. to I-15 NB Ramps	County of San Diego	6	EXP	108,000	15,281	0.14	A
	I-15 NB Ramps to I-15 SB Ramps	County of San Diego	6	EXP	108,000	25,979	0.24	A
	I-15 SB Ramps to Old Hwy. 395	County of San Diego	6	EXP	108,000	36,093	0.33	B
	West of Old Hwy. 395	County of San Diego	6	EXP	108,000	30,002	0.28	A

Legend:

Class. = Functional Class

Cap. = Capacity

LOS = Level of Service

4-C = 4 Lane Blvd. with Raised Median

EXP = Expressway

2-Cd = 2 Lane Light Collector (no median)

As shown on Table 8-3, the studied street segments are operating at an acceptable level of service C or better in the Near Term Plus Project conditions.

Table **8-4** shows the Near Term with and without Project street segment comparisons.

Table 8-4: Near Term and Near Term Plus Project Street Segment Analysis

Road	Segment	# of Lanes	LOS "E" Capacity	Class.	Near Term			Near Term + Project			ΔV/C
					LOS	Volume	V/C	LOS	Volume	V/C	
Horse Ranch Creek Rd.	South of Stewart Canyon Rd.	2	16,200	2-Cd	C	6,335	0.39	C	6,611	0.41	0.017
	Friesian Wy. to Gold Palomino Wy.	4	30,000	4-C	A	7,174	0.24	A	8,278	0.28	0.037
	Gold Palomino Wy. to Andalusian Wy.	4	30,000	4-C	A	9,674	0.32	A	10,778	0.36	0.037
	North of SR-76	4	30,000	4-C	A	8,615	0.29	A	9,719	0.32	0.037
SR-76	Horse Ranch Creek Rd. to I-15 NB Ramps	6	108,000	EXP	A	14,246	0.13	A	15,281	0.14	0.010
	I-15 NB Ramps to I-15 SB Ramps	6	108,000	EXP	A	25,220	0.23	A	25,979	0.24	0.007
	I-15 SB Ramps to Old Hwy. 395	6	108,000	EXP	A	35,886	0.33	B	36,093	0.33	0.002
	West of Old Hwy. 395	6	108,000	EXP	A	29,795	0.28	A	30,002	0.28	0.002

Legend:

LOS= Level of Service

V/C= Volume to Capacity Ratio

ΔV/C= Change in V/C ratio

2-Cd = 2 Lane Light Collector (no median)

EXP = Expressway

4-C = 4 Lane Blvd. with Raised Median

As shown on Table 8-4, the LOS of the street segments remain at an acceptable LOS C or better despite the addition of project traffic

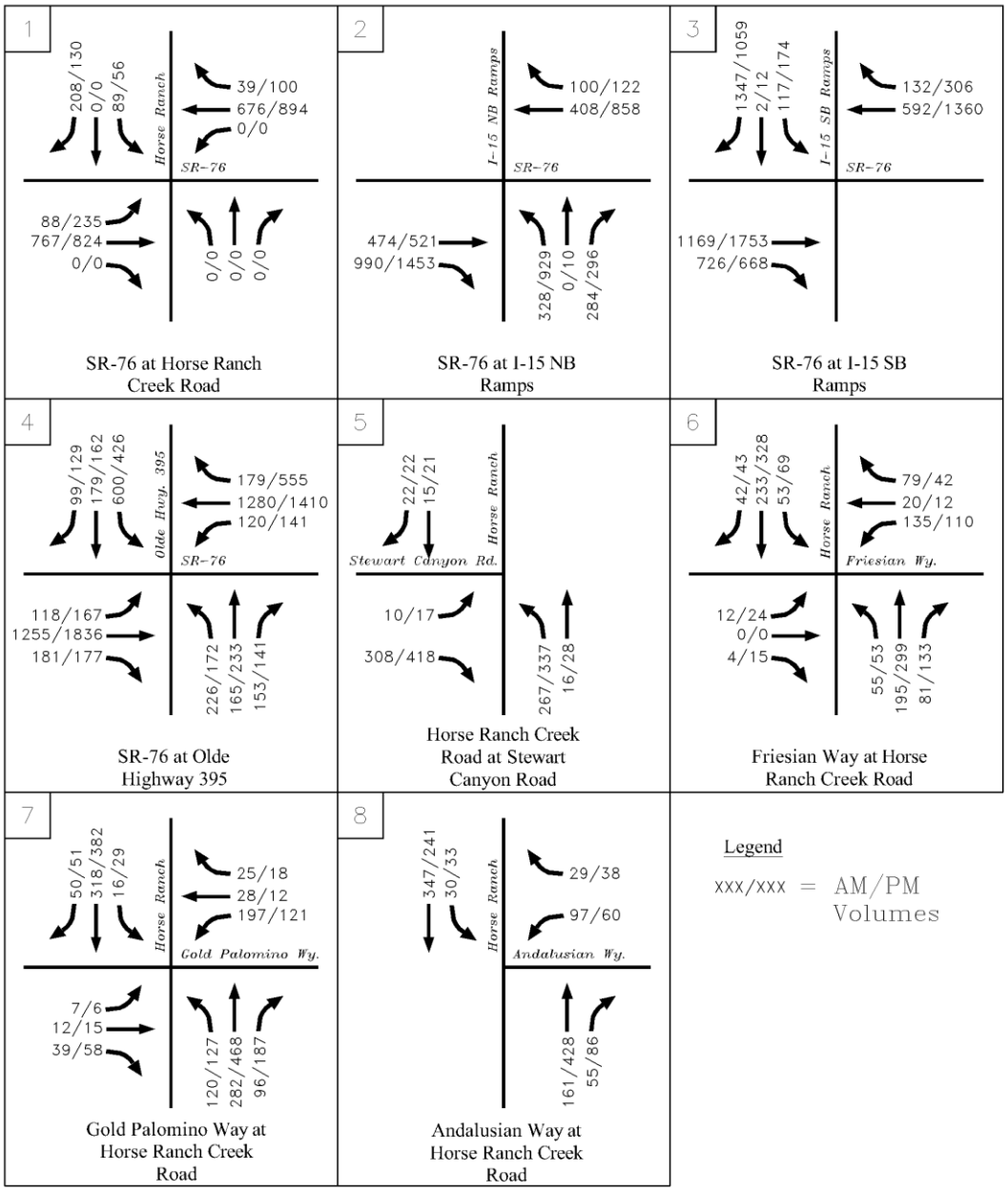
9.0 HORIZON YEAR 2035

Analysis was done in Horizon Year 2035 conditions to determine if a significant deficiency would occur due to the addition of project traffic to the surrounding study area. The volumes used in this condition are based on the existing baseline volumes plus the cumulative project volumes plus a 2.88% growth factor per year (up to Year 2035). Please note when comparing the volumes of the Horizon Year 2035 to the older study (Campus Park Project) Horizon Year volumes, the growth factor applied in this analysis may be considered highly conservative and the results may reflect that due to the methodology.

9.1 Intersection Analysis

The Year 2035 peak hour traffic volumes at the studied intersections are shown on **Figure 9-1**.

Figure 9-1: Year 2035 AM and PM Turning Movement Counts



The Year 2035 intersection analysis is shown on **Table 9-1**.

Table 9-1: Year 2035 Intersection Analysis

Number	Intersection	Control	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	SR-76 / Horse Ranch Creek Road	Signalized	44.9	D	40.1	D
2	SR-76 / I-15 NB Ramps	Signalized	13.3	B	43.7	D
3	SR-76 / I-15 SB Ramps	Signalized	47.1	D	46.9	D
4	SR-76 / Olde Highway 395	Signalized	70.6	E	73.3	E
5	Horse Ranch Creek Road / Stewart Canyon Road	Unsignalized	10.6	B	12.7	B
6	Friesian Way / Horse Ranch Creek Road	Unsignalized	13.8	B	14.4	B
7	Gold Palomino Way / Horse Ranch Creek Road	Unsignalized	15.6	B	15.3	B
8	Andalusian Way / Horse Ranch Creek Road	Unsignalized	6.4	A	7.1	A

Notes:

LOS = Level of Service

Delay = seconds per vehicle

As shown on Table 9-1, all studied intersections will operate at an acceptable level of service D or better in both the AM and PM peak hour except for the following:

- SR-76 / Olde Highway 395 (AM and PM peak hour)

The synchro worksheets for the Year 2035 conditions are provided in **Appendix E**.

9.2 Street Segment Analysis

Figure 9-2 shows the Year 2035 ADT.

Table 9-2 shows the Year 2035 street segment analysis.

Figure 9-2: Year 2035 ADT

Legend

= Studied Intersection Location

X = Studied Street Segment

= Project Location

XX,XXX = ADT Number

N
NO SCALE

Table 9-2: Year 2035 Street Segment Analysis

Road	Segment	Standard	# of Ln.	Class.	Cap.	Volume	V/C	LOS
Horse Ranch Creek Rd.	South of Stewart Canyon Rd.	County of San Diego	2	2-Cd	16,200	7,211	0.45	D
	Friesian Wy. to Gold Palomino Wy.	County of San Diego	4	4-C	30,000	7,976	0.27	A
	Gold Palomino Wy. to Andalusian Wy.	County of San Diego	4	4-C	30,000	10,789	0.36	A
	North of SR-76	County of San Diego	4	4-C	30,000	10,011	0.33	A
SR-76	Horse Ranch Creek Rd. to I-15 NB Ramps	County of San Diego	6	EXP	108,000	17,272	0.16	A
	I-15 NB Ramps to I-15 SB Ramps	County of San Diego	6	EXP	108,000	30,683	0.28	A
	I-15 SB Ramps to Old Hwy. 395	County of San Diego	6	EXP	108,000	36,354	0.34	B
	West of Old Hwy. 395	County of San Diego	6	EXP	108,000	36,378	0.34	B

Legend:

Class. = Functional Class

Cap. = Capacity

LOS = Level of Service

4-C = 4 Lane Blvd. with Raised Median

EXP = Expressway

2-Cd = 2 Lane Light Collector (no median)

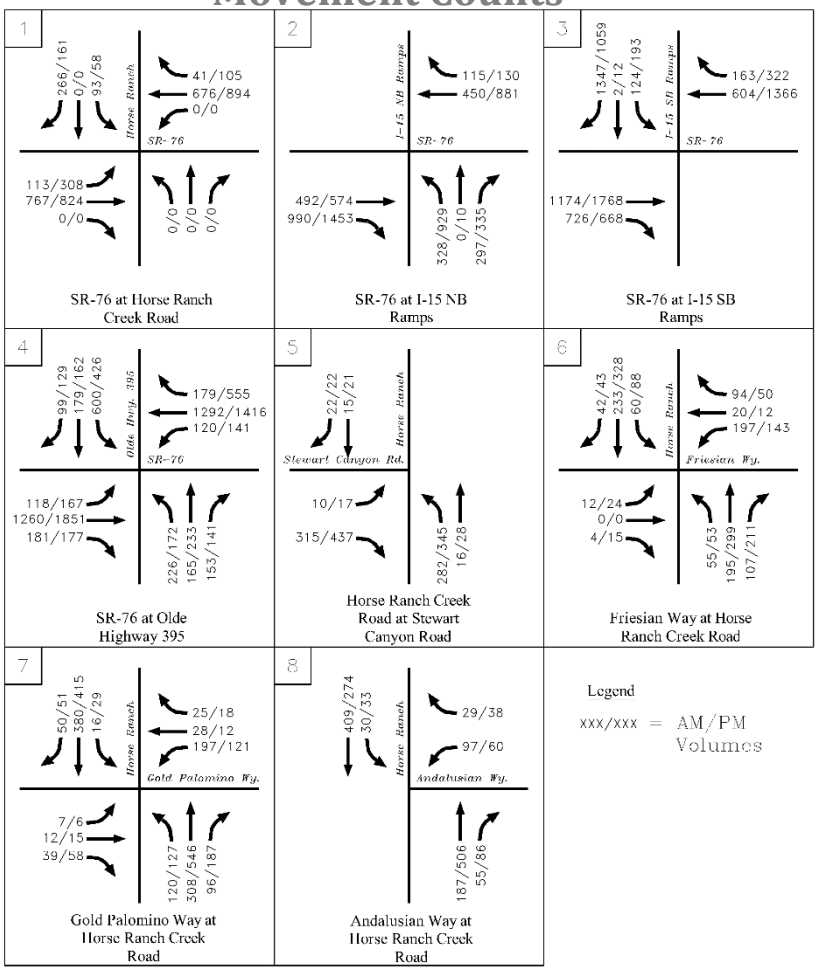
As shown on Table 9-2, the studied street segments are operating at an acceptable level of service D or better in the Year 2035 conditions.

10.0 HORIZON YEAR 2035 PLUS PROJECT

10.1 Intersection Analysis

The Year 2035 Plus Project peak hour traffic volumes at the studied intersections are shown on **Figure 10-1**.

Figure 10-1: Year 2035 Plus Project AM and PM Turning Movement Counts



The Year2035 Plus Project intersection analysis is shown on **Table 10-1**.

Table 10-1: Year 2035 Plus Project Intersection Analysis

Number	Intersection	Control	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	SR-76 / Horse Ranch Creek Road	Signalized	45.2	D	44	D
2	SR-76 / I-15 NB Ramps	Signalized	13.2	B	43	D
3	SR-76 / I-15 SB Ramps	Signalized	51.1	D	49	D
4	SR-76 / Olde Highway 395	Signalized	71.5	E	74.5	E
5	Horse Ranch Creek Road / Stewart Canyon Road	Unsignalized	10.7	B	13.1	B
6	Friesian Way / Horse Ranch Creek Road	Unsignalized	14.5	B	15.1	B
7	Gold Palomino Way / Horse Ranch Creek Road	Unsignalized	15.9	B	15.4	B
8	Andalusian Way / Horse Ranch Creek Road	Unsignalized	6.4	A	7.1	A

Notes:

LOS = Level of Service

Delay = seconds per vehicle

As shown on Table 10-1, all studied intersections will operate at an acceptable level of service D or better in both the AM and PM peak hour except for the following:

- SR-76 / Olde Highway 395 (AM and PM peak hour)

The synchro worksheets for the Year 2035 Plus Project conditions are provided in **Appendix F**.

Table 10-2 shows the Year 2035 with and without Project intersection comparison to determine if an improvement is required.

Table 10-1: Year 2035 and Year 2035 Plus Project Intersection Comparisons

#	Intersection	Year 2035				Year 2035 + Project							
		AM Peak Hour		PM Peak Hour		AM Peak Hour		Δ	I?	PM Peak Hour		Δ	I?
		D	LOS	D	LOS	D	LOS			D	LOS		
1	SR-76 / Horse Ranch Creek Road	44.9	D	40.1	D	45.2	D	0.3	No	44.0	D	3.9	No
2	SR-76 / I-15 NB Ramps	13.3	B	43.7	D	13.2	B	-0.1	No	43.0	D	-0.7	No
3	SR-76 / I-15 SB Ramps	47.1	D	46.9	D	51.1	D	4.0	No	49.0	D	2.1	No
4	SR-76 / Olde Highway 395	70.6	E	73.3	E	71.5	E	0.9	No	74.5	E	1.2	No
5	Horse Ranch Creek Road / Stewart Canyon Road	10.6	B	12.7	B	10.7	B	0.1	No	13.1	B	0.4	No
6	Friesian Way / Horse Ranch Creek Road	13.8	B	14.4	B	14.5	B	0.7	No	15.1	B	0.7	No
7	Gold Palomino Way / Horse Ranch Creek Road	15.6	B	15.3	B	15.9	B	0.3	No	15.4	B	0.1	No
8	Andalusian Way / Horse Ranch Creek Road	6.4	A	7.1	A	6.4	A	0.0	No	7.1	A	0.0	No

Notes:

LOS = Level of Service

Δ = Change

I = Improvement Needed

D= Delay

As shown on Table 10-2, no improvements are needed because the intersections have an acceptable LOS of D or better in the with and without project conditions. Also for intersections that have an unacceptable LOS E or worse, the change in delay is below the threshold of 5.0 seconds or more to require an improvement.

10.2 Street Segment Analysis

Figure 10-2 shows the Year 2035 Plus Project ADT.

Table 10-3 shows the Year 2035 Plus Project street segment analysis.

Figure 10-2: Year 2035 Plus Project ADT

Table 10-3: Year 2035 Plus Project Street Segment Analysis

Road	Segment	Standard	# of Ln.	Class.	Cap.	Volume	V/C	LOS
Horse Ranch Creek	South of Stewart Canyon Rd.	County of San Diego	2	2-Cd	16,200	7,487	0.46	D
	Friesian Wy. to Gold Palomino Wy.	County of San Diego	4	4-C	30,000	9,080	0.30	A
	Gold Palomino Wy. to Andalusian Wy.	County of San Diego	4	4-C	30,000	11,893	0.40	A
	North of SR-76	County of San Diego	4	4-C	30,000	11,115	0.37	A
SR-76	Horse Ranch Creek Rd. to I-15 NB Ramps	County of San Diego	6	EXP	108,000	18,307	0.17	A
	I-15 NB Ramps to I-15 SB Ramps	County of San Diego	6	EXP	108,000	31,442	0.29	A
	I-15 SB Ramps to Old Hwy. 395	County of San Diego	6	EXP	108,000	36,561	0.34	B
	West of Old Hwy. 395	County of San Diego	6	EXP	108,000	36,585	0.34	B

Legend:

Class. = Functional Class

Cap. = Capacity

LOS = Level of Service

4-C = 4 Lane Blvd. with Raised Median

EXP = Expressway

2-Cd = 2 Lane Light Collector (no median)

As shown on Table 10-3, the studied street segments are operating at an acceptable level of service D or better in the Year 2035 Plus Project conditions.

Table **10-4** shows the Year 2035 with and without Project street segment comparisons.

Table 10-4: Year 2035 and Year 2035 Plus Project Street Segment Analysis

Road	Segment	# of Lanes	LOS "E" Capacity	Class.	Year 2035			Year 2035 + Project			ΔV/C
					LOS	Volume	V/C	LOS	Volume	V/C	
Horse Ranch Creek Rd.	South of Stewart Canyon Rd.	2	16,200	2-Cd	D	7,211	0.45	D	7,487	0.46	0.017
	Friesian Wy. to Gold Palomino Wy.	4	30,000	4-C	A	7,976	0.27	A	9,080	0.30	0.037
	Gold Palomino Wy. to Andalusian Wy.	4	30,000	4-C	A	10,789	0.36	A	11,893	0.40	0.037
	North of SR-76	4	30,000	4-C	A	10,011	0.33	A	11,115	0.37	0.037
SR-76	Horse Ranch Creek Rd. to I-15 NB Ramps	6	108,000	EXP	A	17,272	0.16	A	18,307	0.17	0.010
	I-15 NB Ramps to I-15 SB Ramps	6	108,000	EXP	A	30,683	0.28	A	31,442	0.29	0.007
	I-15 SB Ramps to Old Hwy. 395	6	108,000	EXP	B	36,354	0.34	B	36,561	0.34	0.002
	West of Old Hwy. 395	6	108,000	EXP	B	36,378	0.34	B	36,585	0.34	0.002

Legend:

LOS= Level of Service

V/C= Volume to Capacity Ratio

ΔV/C= Change in V/C ratio

2-Cd = 2 Lane Light Collector (no median)

EXP = Expressway

4-C = 4 Lane Blvd. with Raised Median

As shown on Table 10-4, the LOS of the street segments remain at an acceptable LOS D or better despite the addition of project traffic.

11.0 OTHER MODES OF TRANSPORTATION

This section of the report will discuss other modes of transportation facilities for pedestrians, bicycles, transit, and trails.

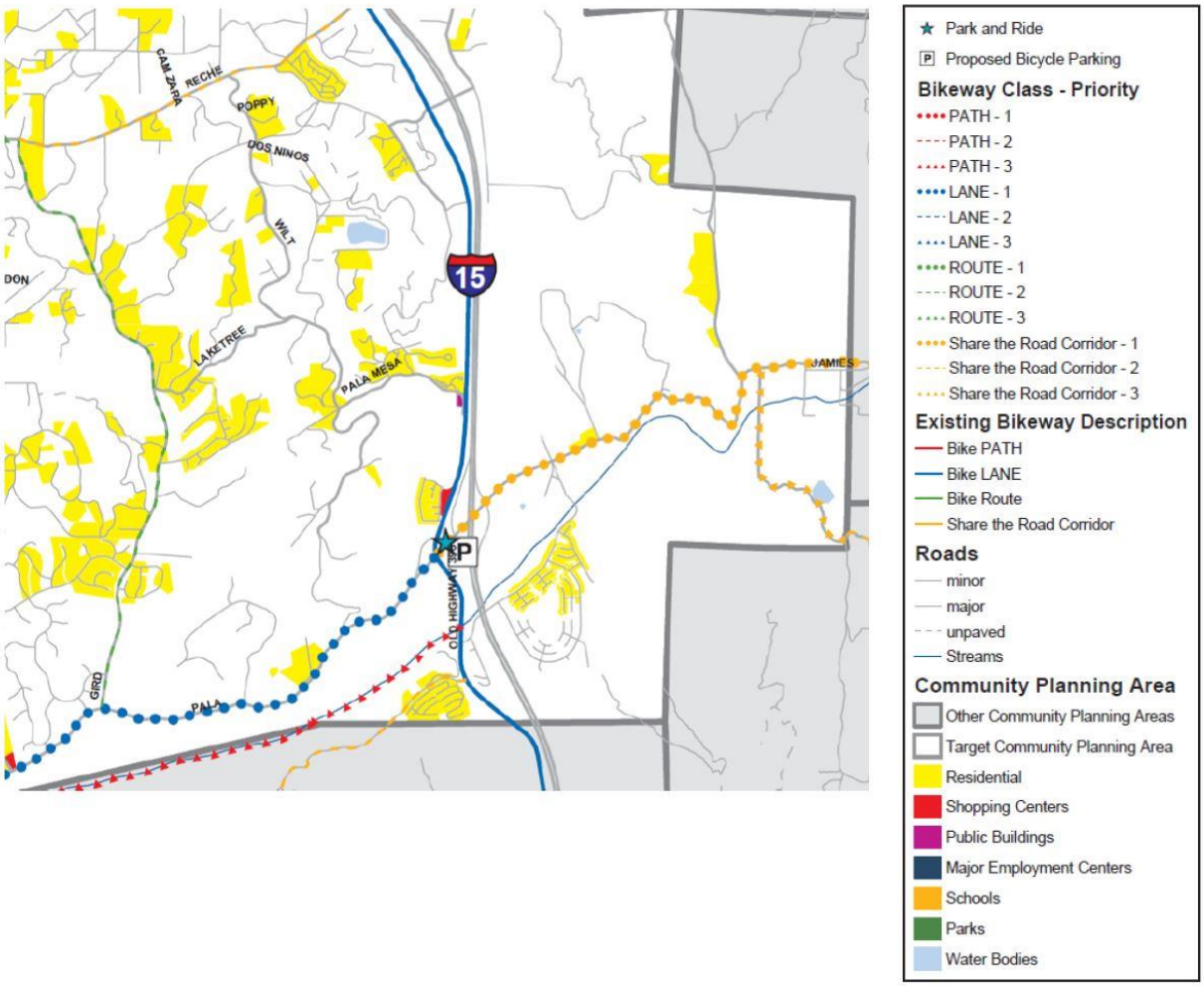
11.1 Pedestrian Facilities

As it relates to the project's study area, sidewalks are provided on the northern and southern portions of SR-76 only from Olde Highway 395 to I-15 SB Ramps. No sidewalks are currently present along the studied segments on Horse Ranch Creek Road. However, the project would provide sidewalk connections that would provide means of travel to the Town Center and other amenities located throughout the Campus Park community.

11.2 Bicycle Facilities

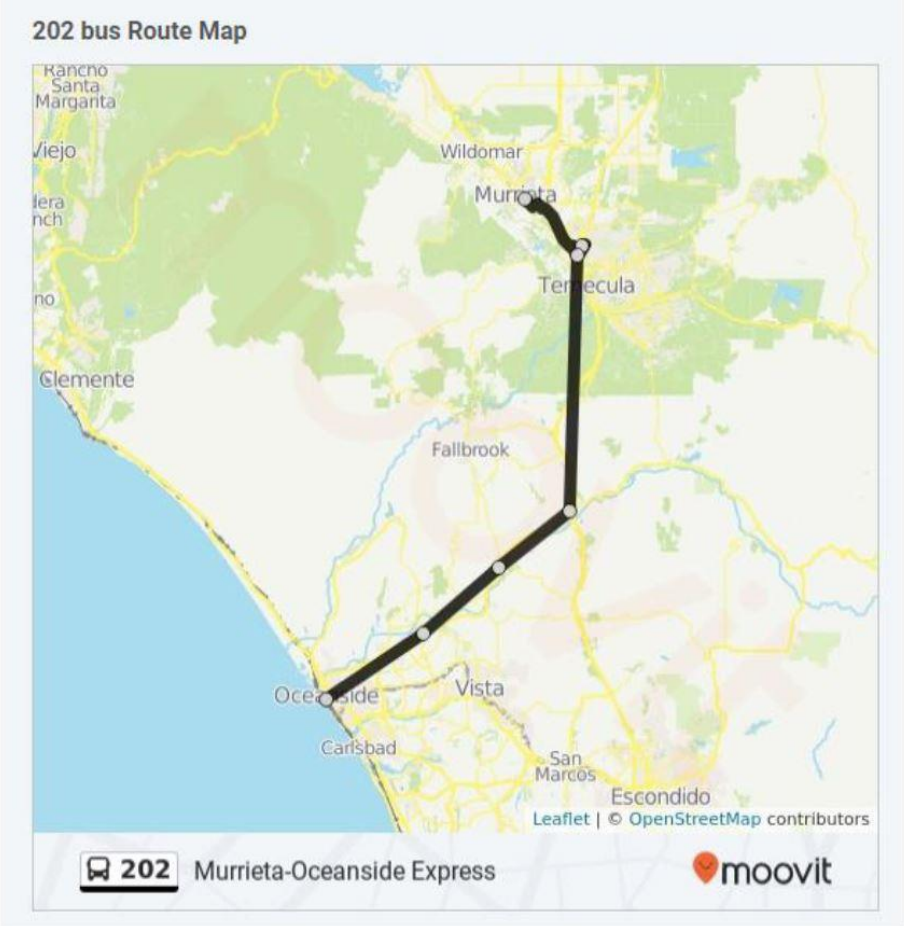
Within the project's study area, a Class II bicycle lane is proposed along the SR-76 from the Bonsall Community boundary to Old Highway 395. A share the road bicycle lane is proposed along SR-76 from Old Highway 395 to the Pala-Pauma Community boundary. **Figure 11-1** shows Existing and Proposed Bicycle Facilities Map for Fallbrook obtained from the County of San Diego Bicycle Master Plan.

Figure 11-1: County of San Diego Bicycle Master Plan



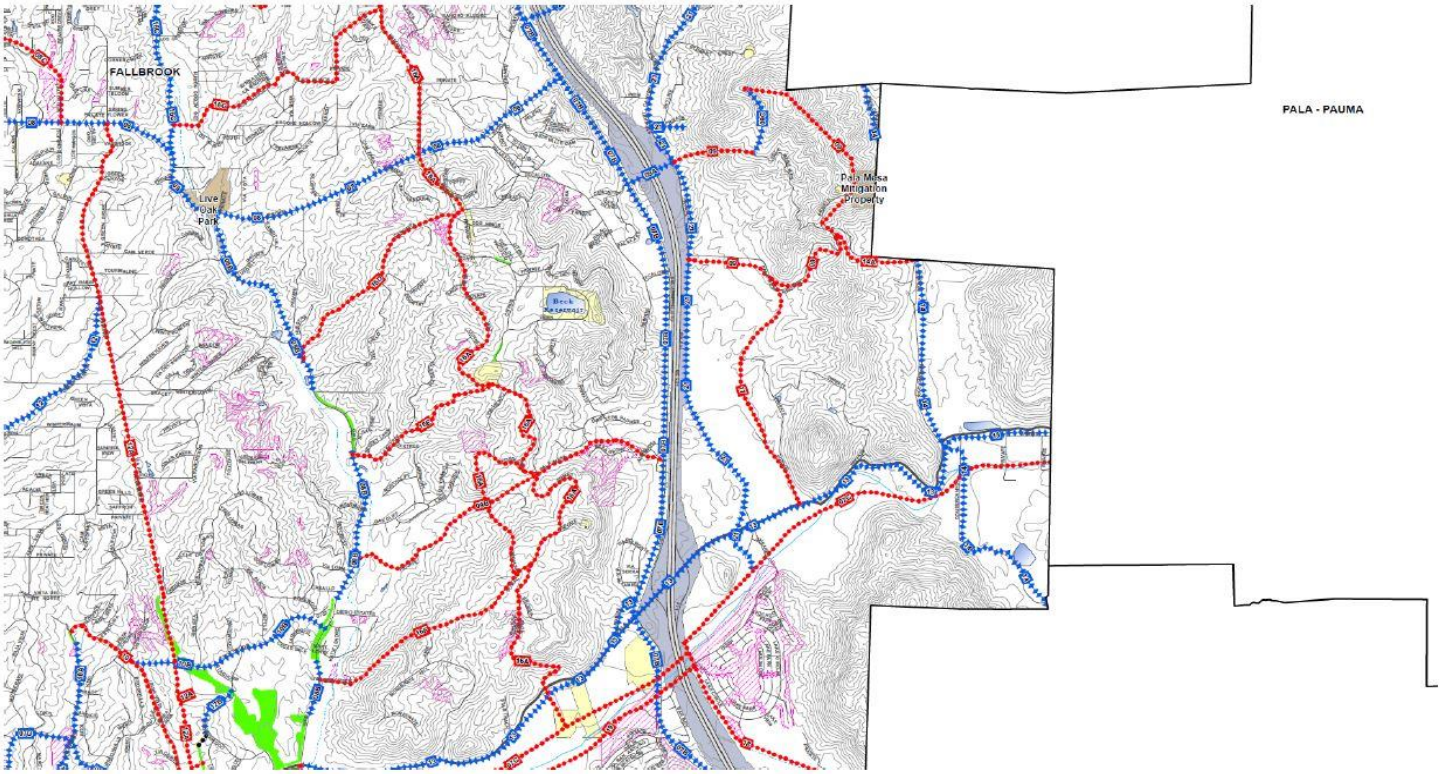
11.3 Transit Facilities

The closest transit facility is located along Old Highway 395 just north of SR-76. This facility currently services the 202 route for Riverside Transit Agency (RTA). The 202 commutes from the Murrieta Walmart to the Oceanside Transit Center. A map of the 202 route is shown below. The I-15/SR 76 Interchange is located to the southwest of the original Campus Park project site and California Department of Transportation (Caltrans) "park and ride" facility with 223 spaces is located in the northwest quadrant of the interchange.



11.4 Trails Facilities

A system of trails and pathways were proposed as part of the previous SPA and has been developed within the existing Campus Park development. The project would have access and would provide additional connections to the trails and pathways within the community. The trials located within the ¼ mile of the project include the following: a proposed community pathway is located along the SR-76 from Horse Ranch Creek Road to further west of Old Highway 395, a proposed community trail will be located along Horse Ranch Creek road from the SR-76 to the Pala Mesa Heights, and a proposed community pathway will be located along Pankey Road from the SR-76 to north of Stewart Canyon Road. A map of the Fallbrook trails is shown below.



12.0 CONCLUSION AND SUMMARY

The proposed project includes the development of 138 single family detached dwelling units on two parcels for a total of 11.5 acres in the County of San Diego. The proposed project trip generation is **1,380** ADT with **110** AM (**33** in / **77** out) peak hour trips and **138** PM (**97** in / **41** out) peak hour trips.

The following study area of intersections are the following:

Intersections

1. SR-76 / Horse Ranch Creek Road
2. SR-76 / I-15 NB Ramps
3. SR-76 / I-15 SB Ramps
4. SR-76 / Olde Highway 395
5. Horse Ranch Creek Road / Stewart Canyon Road
6. Horse Ranch Creek Road / Friesian Way
7. Horse Ranch Creek Road / Gold Palomino Way
8. Horse Ranch Creek Road / Andalusian Way

Existing:

Intersection:

- All studied intersections have an acceptable LOS in this scenario

Street Segments:

- All studied street segments have an acceptable LOS in this scenario

Near Term Opening Year 2024:

Intersection:

- All studied intersections have an acceptable LOS in this scenario

Street Segments:

- All studied street segments have an acceptable LOS in this scenario

Near Term Opening Year 2024 Plus Project:

Intersection:

- All studied intersections have an acceptable LOS in this scenario

Street Segments:

- All studied street segments have an acceptable LOS in this scenario

Buildout Year 2035:

Intersection:

- SR 76 / Olde Highway 395
    - AM peak = LOS E
    - PM peak = LOSE

Street Segments:

- All studied street segments have an acceptable LOS in this scenario

Buildout Year 2035 Plus Project:

Intersection:

- SR 76 / Olde Highway 395
    - AM peak = LOS E
    - PM peak = LOSE

Street Segments:

- All studied street segments have an acceptable LOS in this scenario

Despite the additions of project traffic, no improvements will be required to any of the studied intersections and street segments per the thresholds outlined in section 3.4. The comparison tables for the intersections and street segments for the Existing, Near Term, and Year 2035 scenarios are respectively shown on the following pages respectively.

Number	Intersection	Control	AM Peak Hour		PM Peak Hour	
			Delay	LOS	Delay	LOS
1	SR-76 / Horse Ranch Creek Road	Signalized	39.5	D	37.1	D
2	SR-76 / I-15 NB Ramps	Signalized	10.2	B	13.2	B
3	SR-76 / I-15 SB Ramps	Signalized	25.3	C	14.7	B
4	SR-76 / Olde Highway 395	Signalized	36.8	D	33.4	C
5	Horse Ranch Creek Road / Stewart Canyon Road	Unsignalized	8.8	A	9.0	A
6	Friesian Way / Horse Ranch Creek Road	Unsignalized	9.6	A	9.9	A
7	Gold Palomino Way / Horse Ranch Creek Road	Unsignalized	10.0	B	10.3	B
8	Andalusian Way / Horse Ranch Creek Road	Unsignalized	10.0	B	10.0	B

Notes:

Delay = seconds

LOS = Level of Service

#	Intersection	Near Term				Near Term + Project							
		AM Peak Hour		PM Peak Hour		AM Peak Hour		Δ	I?	PM Peak Hour		Δ	I?
		D	LOS	D	LOS	D	LOS			D	LOS		
1	SR-76 / Horse Ranch Creek Road	41.1	D	46.9	D	41.5	D	0.4	No	52.5	D	5.6	No
2	SR-76 / I-15 NB Ramps	11.5	B	20.2	C	11.6	B	0.1	No	20.2	C	0.0	No
3	SR-76 / I-15 SB Ramps	34.5	C	45.1	D	37.7	D	3.2	No	45.9	D	0.8	No
4	SR-76 / Olde Highway 395	46.4	D	43.5	D	46.5	D	0.1	No	43.6	D	0.1	No
5	Horse Ranch Creek Road / Stewart Canyon Road	8.8	A	11.7	B	10.3	B	1.5	No	12.0	B	0.3	No
6	Friesian Way / Horse Ranch Creek Road	9.1	A	13.9	B	14.1	B	5.0	No	14.6	B	0.7	No
7	Gold Palomino Way / Horse Ranch Creek Road	7.4	A	14.7	B	15.3	B	7.9	No	14.7	B	0.0	No
8	Andalusian Way / Horse Ranch Creek Road	6.3	A	7.0	A	6.2	A	-0.1	No	7.0	A	0.0	No

Notes:

LOS = Level of Service

Δ = Change

I = Improvement Needed

D= Delay

#	Intersection	Year 2035				Year 2035 + Project							
		AM Peak Hour		PM Peak Hour		AM Peak Hour		Δ	I ?	PM Peak Hour		Δ	I ?
		D	LOS	D	LOS	D	LOS			D	LOS		
1	SR-76 / Horse Ranch Creek Road	44.9	D	40.1	D	45.2	D	0.3	No	44.0	D	3.9	No
2	SR-76 / I-15 NB Ramps	13.3	B	43.7	D	13.2	B	-0.1	No	43.0	D	-0.7	No
3	SR-76 / I-15 SB Ramps	47.1	D	46.9	D	51.1	D	4.0	No	49.0	D	2.1	No
4	SR-76 / Olde Highway 395	70.6	E	73.3	E	71.5	E	0.9	No	74.5	E	1.2	No
5	Horse Ranch Creek Road / Stewart Canyon Road	10.6	B	12.7	B	10.7	B	0.1	No	13.1	B	0.4	No
6	Friesian Way / Horse Ranch Creek Road	13.8	B	14.4	B	14.5	B	0.7	No	15.1	B	0.7	No
7	Gold Palomino Way / Horse Ranch Creek Road	15.6	B	15.3	B	15.9	B	0.3	No	15.4	B	0.1	No
8	Andalusian Way / Horse Ranch Creek Road	6.4	A	7.1	A	6.4	A	0.0	No	7.1	A	0.0	No

Notes:

LOS = Level of Service

Δ = Change

I = Improvement Needed

D= Delay

Road	Segment	Standard	# of Ln.	Class.	Cap.	Volume	V/C	LOS
Horse Ranch Creek Rd.	South of Stewart Canyon Rd.	County of San Diego	2	2-Cd	16,200	2,177	0.13	B
	Friesian Wy. to Gold Palomino Wy.	County of San Diego	2	2-Cd	16,200	1,992	0.12	B
	Gold Palomino Wy. to Andalusian Wy.	County of San Diego	2	2-Cd	16,200	2,769	0.17	B
	North of SR-76	County of San Diego	2	2-Cd	16,200	3,469	0.21	B
SR-76	Horse Ranch Creek Rd. to I-15 NB Ramps	County of San Diego	6	EXP	108,000	13,421	0.12	A
	I-15 NB Ramps to I-15 SB Ramps	County of San Diego	6	EXP	108,000	23,730	0.22	A
	I-15 SB Ramps to Old Hwy. 395	County of San Diego	6	EXP	108,000	33,766	0.31	A
	West of Old Hwy. 395	County of San Diego	6	EXP	108,000	27,999	0.26	A

Legend:

Class. = Functional Class

Cap. = Capacity

LOS = Level of Service

2-Cd = 2 Lane Light Collector (no median)

EXP = Expressway

Road	Segment	# of Lanes	LOS "E" Capacity	Class.	Near Term			Near Term + Project			ΔV/C
					LOS	Volume	V/C	LOS	Volume	V/C	
Horse Ranch Creek Rd.	South of Stewart Canyon Rd.	2	16,200	2-Cd	C	6,335	0.39	C	6,611	0.41	0.017
	Friesian Wy. to Gold Palomino Wy.	4	30,000	4-C	A	7,174	0.24	A	8,278	0.28	0.037
	Gold Palomino Wy. to Andalusian Wy.	4	30,000	4-C	A	9,674	0.32	A	10,778	0.36	0.037
	North of SR-76	4	30,000	4-C	A	8,615	0.29	A	9,719	0.32	0.037
SR-76	Horse Ranch Creek Rd. to I-15 NB Ramps	6	108,000	EXP	A	14,246	0.13	A	15,281	0.14	0.010
	I-15 NB Ramps to I-15 SB Ramps	6	108,000	EXP	A	25,220	0.23	A	25,979	0.24	0.007
	I-15 SB Ramps to Old Hwy. 395	6	108,000	EXP	A	35,886	0.33	B	36,093	0.33	0.002
	West of Old Hwy. 395	6	108,000	EXP	A	29,795	0.28	A	30,002	0.28	0.002

Legend:

LOS= Level of Service

V/C= Volume to Capacity Ratio

ΔV/C= Change in V/C ratio

2-Cd = 2 Lane Light Collector (no median)

EXP = Expressway

4-C = 4 Lane Blvd. with Raised Median

Road	Segment	# of Lanes	LOS "E" Capacity	Class.	Year 2035			Year 2035 + Project			ΔV/C
					LOS	Volume	V/C	LOS	Volume	V/C	
Horse Ranch Creek Rd.	South of Stewart Canyon Rd.	2	16,200	2-Cd	D	7,211	0.45	D	7,487	0.46	0.017
	Friesian Wy. to Gold Palomino Wy.	4	30,000	4-C	A	7,976	0.27	A	9,080	0.30	0.037
	Gold Palomino Wy. to Andalusian Wy.	4	30,000	4-C	A	10,789	0.36	A	11,893	0.40	0.037
	North of SR-76	4	30,000	4-C	A	10,011	0.33	A	11,115	0.37	0.037
SR-76	Horse Ranch Creek Rd. to I-15 NB Ramps	6	108,000	EXP	A	17,272	0.16	A	18,307	0.17	0.010
	I-15 NB Ramps to I-15 SB Ramps	6	108,000	EXP	A	30,683	0.28	A	31,442	0.29	0.007
	I-15 SB Ramps to Old Hwy. 395	6	108,000	EXP	B	36,354	0.34	B	36,561	0.34	0.002
	West of Old Hwy. 395	6	108,000	EXP	B	36,378	0.34	B	36,585	0.34	0.002

Legend:

LOS= Level of Service

V/C= Volume to Capacity Ratio

ΔV/C= Change in V/C ratio

2-Cd = 2 Lane Light Collector (no median)

EXP = Expressway

4-C = 4 Lane Blvd. with Raised Median

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Appendix A: Traffic Counts and Growth Factor Calculations

Prepared by National Data & Surveying Services

Horse Ranch Creek Rd & Stewart Canyon Dr

Peak Hour Turning Movement Count

ID: 21-040032-001
City: Fallbrook

Day: Tuesday
Date: 03/02/2021

PEAK HOURS

AM	07:30 AM - 08:30 AM
NOON	NONE
PM	04:00 PM - 05:00 PM

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 06:00 PM

Horse Ranch Creek Rd — SOUTHBOUND

AM	15	3	0	0	14
NOON	0	0	0	0	0
PM	15	7	0	0	19

Stewart Canyon Dr — EASTBOUND

AM	NOON	PM	
108	0	110	
0	0	1	0
6	0	10	0
0	0	0	1
65	0	89	0

Stewart Canyon Dr — WESTBOUND

PM	NOON	AM	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	

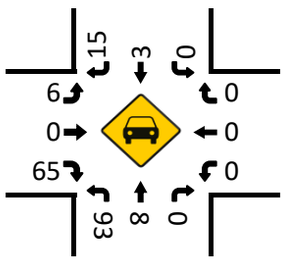
Horse Ranch Creek Rd — NORTHBOUND

PM	96	0	94	9	0
NOON	0	0	0	0	0
AM	68	0	93	8	0

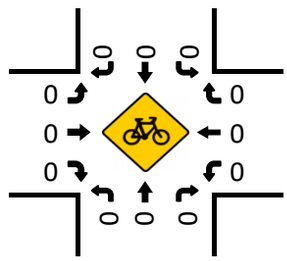
0	1	0	0	
				0
				0
				0
				0
0	0	1	0	

CONTROL			
1-Way Stop (SB)			
TEV	190	0	225
	AM	NOON	PM
PHF	0.88		0.89

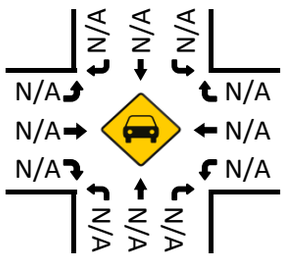
Total Vehicles (AM)



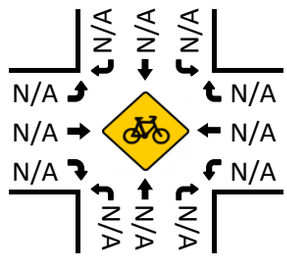
Bikes (AM)



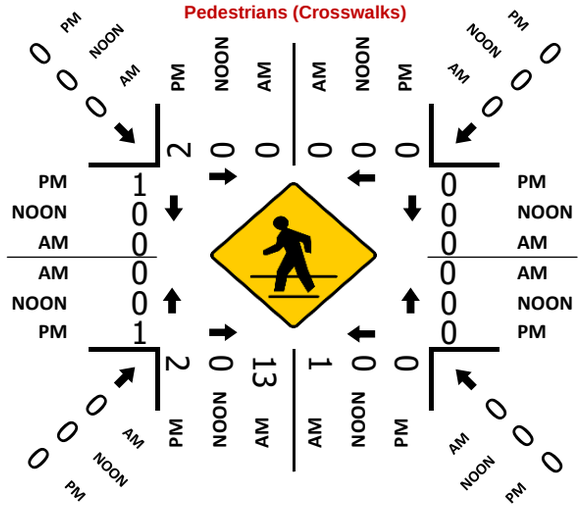
Total Vehicles (Noon)



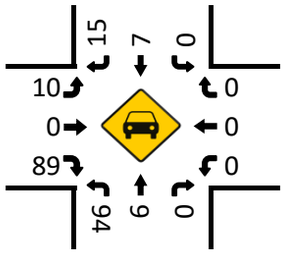
Bikes (NOON)



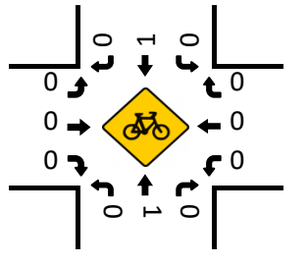
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Horse Ranch Creek Rd & Friesian Way

Peak Hour Turning Movement Count

ID: 21-040032-002
City: Fallbrook

Day: Tuesday
Date: 03/02/2021

PEAK HOURS

AM: 07:45 AM - 08:45 AM
NOON: NONE
PM: 04:00 PM - 05:00 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

Horse Ranch Creek Rd

SOUTHBOUND

AM	0	37	36	0	96	AM
NOON	0	0	0	0	0	NOON
PM	0	53	45	0	105	PM

Friesian Way

EASTBOUND

AM	NOON	PM		
1	0	0		
0	0	0	0	
0	0	0	0	
0	0	0	1	
0	0	4	0	
AM	NOON	PM		

CONTROL

2-Way Stop (EB/WB)

TEV	228	0	274
	AM	NOON	PM
PHF	0.86		0.90

WESTBOUND

PM	NOON	AM		
28	0	52		0
0	0	0		2
26	0	41		0
0	0	0		0
85	0	53		
PM	NOON	AM		

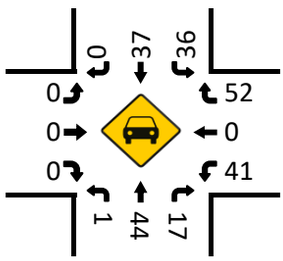
Friesian Way

NORTHBOUND

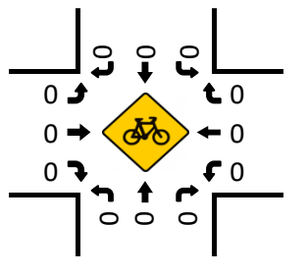
PM	84	1	0	77	40	PM
NOON	0	0	0	0	0	NOON
AM	78	0	1	44	17	AM

Horse Ranch Creek Rd

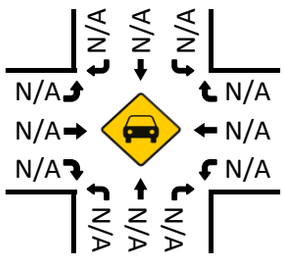
Total Vehicles (AM)



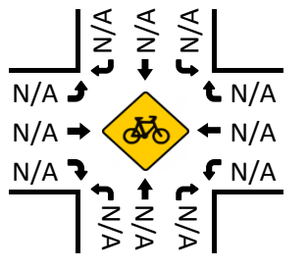
Bikes (AM)



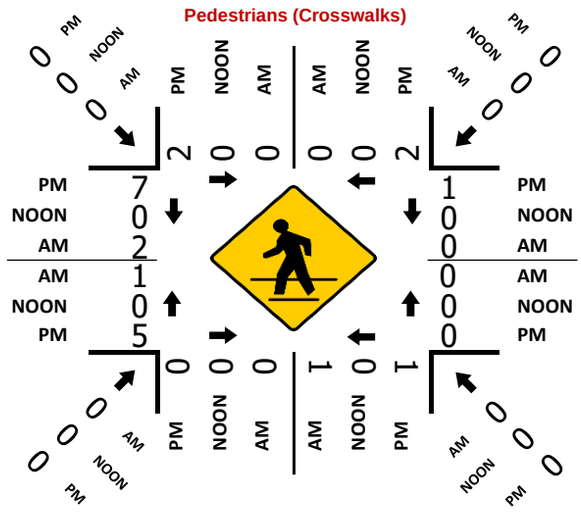
Total Vehicles (Noon)



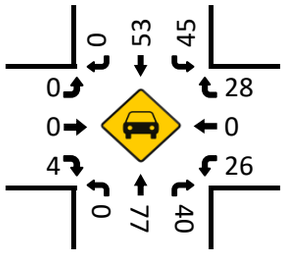
Bikes (NOON)



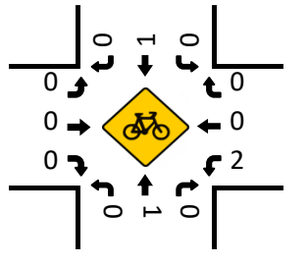
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Horse Ranch Creek Rd & Gold Palomino Way

Peak Hour Turning Movement Count

ID: 21-040032-003
City: Fallbrook

Day: Tuesday
Date: 03/02/2021

PEAK HOURS	COUNT PERIODS
07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NONE	NONE
04:00 PM - 05:00 PM	04:00 PM - 06:00 PM

Horse Ranch Creek Rd — SOUTHBOUND

	L	T	R	U	Total	
AM	0	71	12	0	65	AM
NOON	0	0	0	0	0	NOON
PM	0	64	22	0	120	PM

Gold Palomino Way — EASTBOUND

AM	NOON	PM		
0	0	0	⇦	
0	0	0	↶	0
0	0	0	↱	1
0	0	0	→	0.5
0	0	0	↷	0.5
AM	NOON	PM		

Gold Palomino Way — WESTBOUND

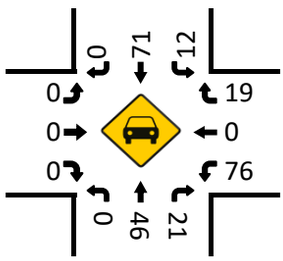
PM	NOON	AM		
14	0	19	↰	1
0	0	0	←	0.5
31	0	76	↰	0.5
1	0	0	↶	0
100	0	33	⇨	
PM	NOON	AM		

Horse Ranch Creek Rd — NORTHBOUND

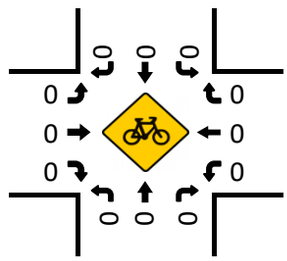
	L	T	T	R	Total	
PM	95	0	0	106	77	PM
NOON	0	0	0	0	0	NOON
AM	147	0	0	46	21	AM

CONTROL			
2-Way Stop (EB/WB)			
TEV	245 AM	0 NOON	315 PM
PHF	0.86		0.88

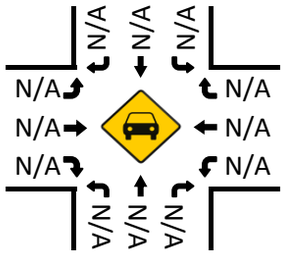
Total Vehicles (AM)



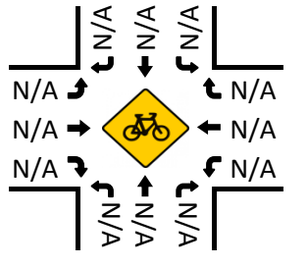
Bikes (AM)



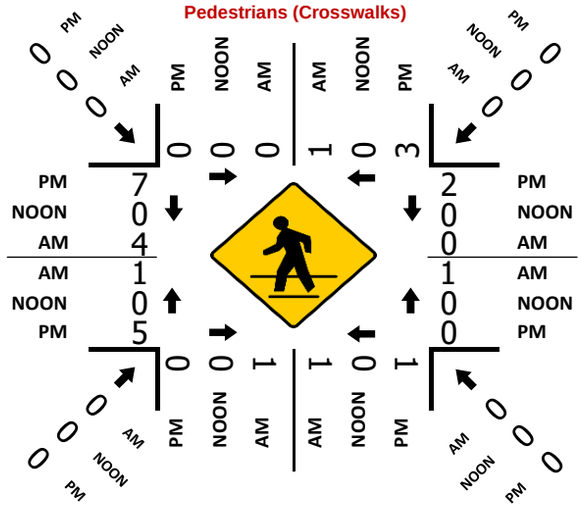
Total Vehicles (Noon)



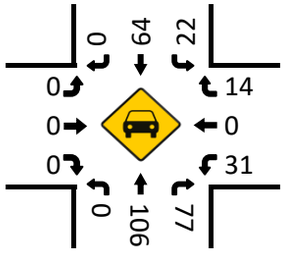
Bikes (NOON)



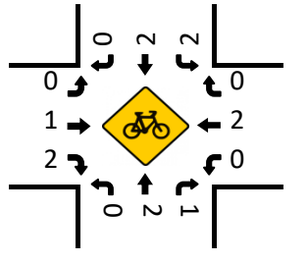
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Horse Ranch Creek Rd & Andalusian Way

Peak Hour Turning Movement Count

ID: 21-040032-004
City: Fallbrook

Day: Tuesday
Date: 03/02/2021

PEAK HOURS

AM	07:00 AM - 08:00 AM
NOON	NONE
PM	04:00 PM - 05:00 PM

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 06:00 PM

Horse Ranch Creek Rd — SOUTHBOUND

AM	0	132	10	0	60
NOON	0	0	0	0	0
PM	0	90	5	0	179

EASTBOUND — Andalusian Way

AM	NOON	PM	
0	0	0	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0

WESTBOUND — Andalusian Way

	PM	NOON	AM
1	11	0	6
0.5	0	0	0
0.5	15	0	37
0	0	0	1
	28	0	29

NORTHBOUND — Horse Ranch Creek Rd

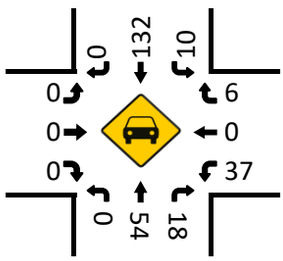
PM	105	0	0	168	23
NOON	0	0	0	0	0
AM	169	0	0	54	18

0	1	0	0	
			0	0	2	0

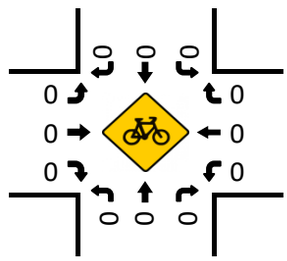
CONTROL: 1-Way Stop (WB)

	AM	NOON	PM
TEV	258	0	312
PHF	0.85		0.89

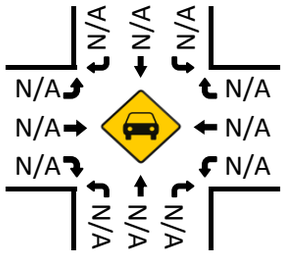
Total Vehicles (AM)



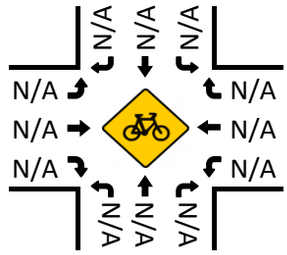
Bikes (AM)



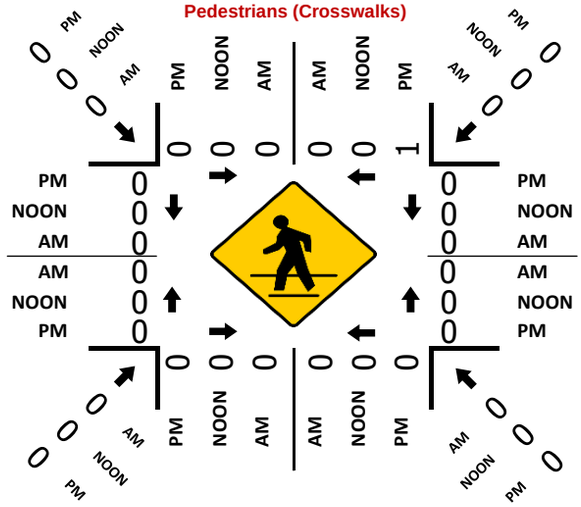
Total Vehicles (Noon)



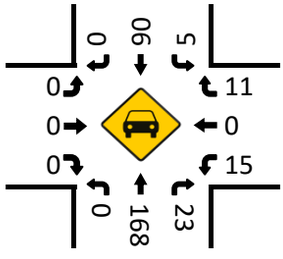
Bikes (NOON)



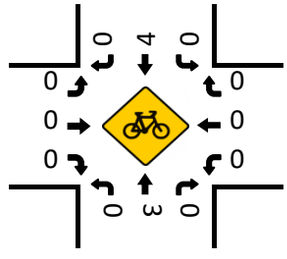
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)

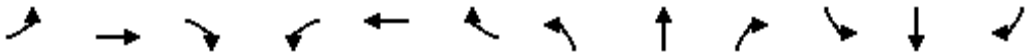


Growth Factor Calculations

Road	Segment	2011 volumes	2016 volumes	Increase in Volume 2011 to 2016	Increase per year (6 years)	Growth % per year
Horse Ranch Creek Rd.	South of Stewart Canyon Rd.					
	Friesian Wy. to Gold Palomino Wy.					
	Gold Palomino Wy. to Andalusian Wy.					
	North of SR-76					
SR-76	Horse Ranch Creek Rd. to I-15 NB Ramps	11200	14100	2900	483	4.32%
	I-15 NB Ramps to I-15 SB Ramps	25700	29500	3800	633	2.46%
	I-15 SB Ramps to Old Hwy. 395	25700	29500	3800	633	2.46%
	West of Old Hwy. 395	22900	26000	3100	517	2.26%
						Avg
						2.88%

		Date of Counts Conducted from Campus Park TIA (2009)						
Road	Segment	2007	2008	2009	(Growth % per) * Base Year ADT	Estimated 2021 Volumes	Estimated 2024 Volumes	Estimated 2035 Volumes
Horse Ranch Creek Rd.	South of Stewart Canyon Rd.				63	2177	2365	3053
	Friesian Wy. to Gold Palomino Wy.				57	1992	2164	2794
	Gold Palomino Wy. to Andalusian Wy.				80	2769	3008	3884
	North of SR-76				100	3469	3768	4865
SR-76	Horse Ranch Creek Rd. to I-15 NB Ramps	9569	0	0	275	13421	14246	17272
	I-15 NB Ramps to I-15 SB Ramps	0	17274	0	497	23730	25220	30683
	I-15 SB Ramps to Old Hwy. 395	0	24579	0	707	33766	35886	36354
	West of Old Hwy. 395	0	0	20817	599	27999	29795	36378

Appendix B: Synchro Reports - Existing



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	438	0	0	386	22	0	0	0	51	0	119
Future Volume (vph)	50	438	0	0	386	22	0	0	0	51	0	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	7.5			7.5						5.8	
Lane Util. Factor	1.00	0.95			0.95						1.00	
Frt	1.00	1.00			0.99						0.91	
Flt Protected	0.95	1.00			1.00						0.99	
Satd. Flow (prot)	1770	3539			3511						1662	
Flt Permitted	0.95	1.00			1.00						0.91	
Satd. Flow (perm)	1770	3539			3511						1533	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	54	476	0	0	420	24	0	0	0	55	0	129
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	88	0
Lane Group Flow (vph)	54	476	0	0	441	0	0	0	0	0	96	0
Turn Type	Prot	NA		Prot	NA					Perm	NA	
Protected Phases	5	2		1	6			3			4	
Permitted Phases							3			4		
Actuated Green, G (s)	6.1	43.9			33.1						34.8	
Effective Green, g (s)	6.1	43.9			33.1						34.8	
Actuated g/C Ratio	0.05	0.34			0.26						0.27	
Clearance Time (s)	4.7	7.5			7.5						5.8	
Vehicle Extension (s)	3.0	3.0			3.0						3.0	
Lane Grp Cap (vph)	83	1208			903						414	
v/s Ratio Prot	c0.03	0.13			c0.13							
v/s Ratio Perm											c0.06	
v/c Ratio	0.65	0.39			0.49						0.23	
Uniform Delay, d1	60.2	32.2			40.6						36.5	
Progression Factor	1.00	1.00			1.00						1.00	
Incremental Delay, d2	16.8	1.0			1.9						1.3	
Delay (s)	77.0	33.2			42.4						37.8	
Level of Service	E	C			D						D	
Approach Delay (s)		37.7			42.4			0.0			37.8	
Approach LOS		D			D			A			D	

Intersection Summary			
HCM 2000 Control Delay	39.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	128.6	Sum of lost time (s)	23.1
Intersection Capacity Utilization	44.8%	ICU Level of Service	A
Analysis Period (min)	15		

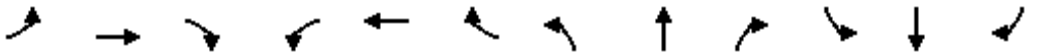
c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	267	556	0	229	56	184	0	159	0	0	0
Future Volume (veh/h)	0	267	556	0	229	56	184	0	159	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	290	604	0	249	61	254	0	115			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	2465	1283	0	3542	1100	412	0	183			
Arrive On Green	0.00	0.69	0.69	0.00	0.69	0.69	0.12	0.00	0.12			
Sat Flow, veh/h	0	3647	1585	0	5274	1585	3563	0	1585			
Grp Volume(v), veh/h	0	290	604	0	249	61	254	0	115			
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1702	1585	1781	0	1585			
Q Serve(g_s), s	0.0	1.9	8.4	0.0	1.1	0.9	4.8	0.0	4.9			
Cycle Q Clear(g_c), s	0.0	1.9	8.4	0.0	1.1	0.9	4.8	0.0	4.9			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2465	1283	0	3542	1100	412	0	183			
V/C Ratio(X)	0.00	0.12	0.47	0.00	0.07	0.06	0.62	0.00	0.63			
Avail Cap(c_a), veh/h	0	2465	1283	0	3542	1100	2342	0	1042			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	3.6	2.1	0.0	3.5	3.5	30.0	0.0	30.1			
Incr Delay (d2), s/veh	0.0	0.1	1.2	0.0	0.0	0.0	1.5	0.0	3.5			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	0.5	3.5	0.0	0.3	0.2	2.1	0.0	2.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	3.7	3.3	0.0	3.5	3.5	31.5	0.0	33.6			
LnGrp LOS	A	A	A	A	A	A	C	A	C			
Approach Vol, veh/h		894			310			369				
Approach Delay, s/veh		3.5			3.5			32.2				
Approach LOS		A			A			C				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		57.0				57.0		14.4				
Change Period (Y+Rc), s		7.5				7.5		6.1				
Max Green Setting (Gmax), s		49.5				49.5		46.9				
Max Q Clear Time (g_c+I1), s		10.4				3.1		6.9				
Green Ext Time (p_c), s		4.8				2.0		1.3				

Intersection Summary	
HCM 6th Ctrl Delay	10.2
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.



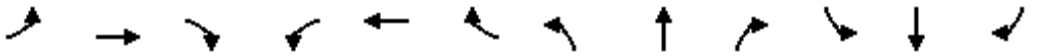
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↱		↑↑	↱				↰	✣	↱
Traffic Volume (veh/h)	0	657	408	0	332	74	0	0	0	66	1	757
Future Volume (veh/h)	0	657	408	0	332	74	0	0	0	66	1	757
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	1870	1870
Adj Flow Rate, veh/h	0	714	443	0	361	80				48	0	849
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	2752	854	0	1915	1279				478	0	850
Arrive On Green	0.00	0.54	0.54	0.00	0.54	0.54				0.27	0.00	0.27
Sat Flow, veh/h	0	5274	1585	0	3647	1585				1781	0	3170
Grp Volume(v), veh/h	0	714	443	0	361	80				48	0	849
Grp Sat Flow(s),veh/h/ln	0	1702	1585	0	1777	1585				1781	0	1585
Q Serve(g_s), s	0.0	5.3	12.6	0.0	3.7	0.7				1.4	0.0	18.9
Cycle Q Clear(g_c), s	0.0	5.3	12.6	0.0	3.7	0.7				1.4	0.0	18.9
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2752	854	0	1915	1279				478	0	850
V/C Ratio(X)	0.00	0.26	0.52	0.00	0.19	0.06				0.10	0.00	1.00
Avail Cap(c_a), veh/h	0	2752	854	0	1915	1279				478	0	850
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	8.7	10.4	0.0	8.3	1.4				19.4	0.0	25.8
Incr Delay (d2), s/veh	0.0	0.0	0.6	0.0	0.2	0.1				0.4	0.0	30.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.7	3.9	0.0	1.3	0.5				0.6	0.0	10.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	8.8	11.0	0.0	8.6	1.5				19.8	0.0	56.4
LnGrp LOS	A	A	B	A	A	A				B	A	E
Approach Vol, veh/h		1157			441						897	
Approach Delay, s/veh		9.6			7.3						54.5	
Approach LOS		A			A						D	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	45.5	25.0	45.5
Change Period (Y+Rc), s	7.5	6.1	7.5
Max Green Setting (Gmax), s	27.0	18.9	38.0
Max Q Clear Time (g_c+I1), s	14.6	20.9	5.7
Green Ext Time (p_c), s	5.3	0.0	2.8

Intersection Summary	
HCM 6th Ctrl Delay	25.3
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	67	717	104	69	732	102	129	94	87	343	102	56
Future Volume (veh/h)	67	717	104	69	732	102	129	94	87	343	102	56
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	73	779	113	75	796	111	140	102	95	373	111	61
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	207	2183	678	209	1522	884	167	221	373	447	174	96
Arrive On Green	0.12	0.43	0.43	0.12	0.43	0.43	0.09	0.12	0.12	0.13	0.15	0.15
Sat Flow, veh/h	1781	5106	1585	1781	3554	1585	1781	1870	1585	3456	1135	624
Grp Volume(v), veh/h	73	779	113	75	796	111	140	102	95	373	0	172
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1777	1585	1781	1870	1585	1728	0	1758
Q Serve(g_s), s	4.8	13.1	5.6	4.9	21.0	4.2	9.8	6.5	6.2	13.4	0.0	11.7
Cycle Q Clear(g_c), s	4.8	13.1	5.6	4.9	21.0	4.2	9.8	6.5	6.2	13.4	0.0	11.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.35
Lane Grp Cap(c), veh/h	207	2183	678	209	1522	884	167	221	373	447	0	270
V/C Ratio(X)	0.35	0.36	0.17	0.36	0.52	0.13	0.84	0.46	0.25	0.83	0.00	0.64
Avail Cap(c_a), veh/h	224	2183	678	224	1522	884	201	756	826	735	0	886
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	51.7	24.6	22.4	51.7	26.7	13.4	56.6	52.2	39.5	54.0	0.0	50.4
Incr Delay (d2), s/veh	1.0	0.5	0.5	1.0	0.3	0.1	22.4	1.5	0.4	4.4	0.0	2.5
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	2.2	5.4	2.2	2.3	8.9	1.5	5.5	3.1	2.5	6.1	0.0	5.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.7	25.0	22.9	52.7	27.1	13.4	79.0	53.7	39.9	58.3	0.0	52.9
LnGrp LOS	D	C	C	D	C	B	E	D	D	E	A	D
Approach Vol, veh/h		965			982			337			545	
Approach Delay, s/veh		26.9			27.5			60.3			56.6	
Approach LOS		C			C			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.6	61.8	17.6	27.0	20.5	61.9	22.1	22.5
Change Period (Y+Rc), s	* 5.7	7.5	* 5.7	7.5	* 5.7	7.5	* 5.7	7.5
Max Green Setting (Gmax), s	* 16	54.3	* 14	64.0	* 16	54.3	* 27	51.3
Max Q Clear Time (g_c+I1), s	6.9	15.1	11.8	13.7	6.8	23.0	15.4	8.5
Green Ext Time (p_c), s	0.1	6.9	0.1	1.1	0.1	6.9	1.0	0.9

Intersection Summary	
HCM 6th Ctrl Delay	36.8
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	6.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	65	93	8	3	15
Future Vol, veh/h	6	65	93	8	3	15
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	-	-	-	-	-
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	7	71	101	9	3	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	222	11	19	0	-	0
Stage 1	11	-	-	-	-	-
Stage 2	211	-	-	-	-	-
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	766	1070	1597	-	-	-
Stage 1	1012	-	-	-	-	-
Stage 2	824	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	717	1070	1597	-	-	-
Mov Cap-2 Maneuver	717	-	-	-	-	-
Stage 1	947	-	-	-	-	-
Stage 2	824	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.8	6.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1597	-	1027	-	-
HCM Lane V/C Ratio	0.063	-	0.075	-	-
HCM Control Delay (s)	7.4	0	8.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	-	-

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	41	0	52	1	44	17	36	37	0
Future Vol, veh/h	0	0	0	41	0	52	1	44	17	36	37	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	45	0	57	1	48	18	39	40	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	206	186	40	177	177	57	40	0	0	66	0	0
Stage 1	118	118	-	59	59	-	-	-	-	-	-	-
Stage 2	88	68	-	118	118	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	752	708	1031	785	717	1009	1570	-	-	1536	-	-
Stage 1	887	798	-	953	846	-	-	-	-	-	-	-
Stage 2	920	838	-	887	798	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	696	689	1031	769	698	1009	1570	-	-	1536	-	-
Mov Cap-2 Maneuver	696	689	-	769	698	-	-	-	-	-	-	-
Stage 1	886	777	-	952	845	-	-	-	-	-	-	-
Stage 2	868	837	-	864	777	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	9.6	0.1	3.7
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1570	-	-	-	887	1536	-	-
HCM Lane V/C Ratio	0.001	-	-	-	0.114	0.025	-	-
HCM Control Delay (s)	7.3	-	-	0	9.6	7.4	0	-
HCM Lane LOS	A	-	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.4	0.1	-	-

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	76	0	19	0	46	21	12	71	0
Future Vol, veh/h	0	0	0	76	0	19	0	46	21	12	71	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	-	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	83	0	21	0	50	23	13	77	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	175	176	77	165	165	62	77	0	0	73	0	0
Stage 1	103	103	-	62	62	-	-	-	-	-	-	-
Stage 2	72	73	-	103	103	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	788	717	984	800	728	1003	1522	-	-	1527	-	-
Stage 1	903	810	-	949	843	-	-	-	-	-	-	-
Stage 2	938	834	-	903	810	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	767	711	984	794	721	1003	1522	-	-	1527	-	-
Mov Cap-2 Maneuver	767	711	-	794	721	-	-	-	-	-	-	-
Stage 1	903	803	-	949	843	-	-	-	-	-	-	-
Stage 2	919	834	-	895	803	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	10	0	1.1
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1522	-	-	-	-	829	1527	-	-
HCM Lane V/C Ratio	-	-	-	-	-	0.125	0.009	-	-
HCM Control Delay (s)	0	-	-	0	0	10	7.4	0	-
HCM Lane LOS	A	-	-	A	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	-	0.4	0	-	-

Intersection	
Int Delay, s/veh	2

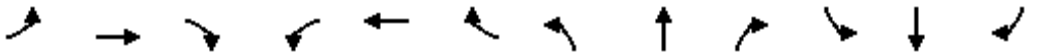
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	38	6	54	18	10	132
Future Vol, veh/h	38	6	54	18	10	132
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	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	41	7	59	20	11	143

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	234	69	0	0	79	0
Stage 1	69	-	-	-	-	-
Stage 2	165	-	-	-	-	-
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	754	994	-	-	1519	-
Stage 1	954	-	-	-	-	-
Stage 2	864	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	748	994	-	-	1519	-
Mov Cap-2 Maneuver	748	-	-	-	-	-
Stage 1	946	-	-	-	-	-
Stage 2	864	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10	0	0.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	774	1519	-
HCM Lane V/C Ratio	-	-	0.062	0.007	-
HCM Control Delay (s)	-	-	10	7.4	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

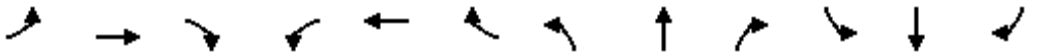
HCM 6th Edition methodology expects strict NEMA phasing.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	134	471	0	0	511	57	0	0	0	32	0	74
Future Volume (vph)	134	471	0	0	511	57	0	0	0	32	0	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	7.5			7.5						5.8	
Lane Util. Factor	1.00	0.95			0.95						1.00	
Frt	1.00	1.00			0.98						0.91	
Flt Protected	0.95	1.00			1.00						0.99	
Satd. Flow (prot)	1770	3539			3486						1663	
Flt Permitted	0.95	1.00			1.00						0.90	
Satd. Flow (perm)	1770	3539			3486						1514	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	146	512	0	0	555	62	0	0	0	35	0	80
RTOR Reduction (vph)	0	0	0	0	9	0	0	0	0	0	104	0
Lane Group Flow (vph)	146	512	0	0	608	0	0	0	0	0	11	0
Turn Type	Prot	NA		Prot	NA					Perm	NA	
Protected Phases	5	2		1	6			3			4	
Permitted Phases							3			4		
Actuated Green, G (s)	10.8	35.6			20.1						9.0	
Effective Green, g (s)	10.8	35.6			20.1						9.0	
Actuated g/C Ratio	0.11	0.38			0.21						0.10	
Clearance Time (s)	4.7	7.5			7.5						5.8	
Vehicle Extension (s)	3.0	3.0			3.0						3.0	
Lane Grp Cap (vph)	202	1334			742						144	
v/s Ratio Prot	c0.08	0.14			c0.17							
v/s Ratio Perm											c0.01	
v/c Ratio	0.72	0.38			0.82						0.08	
Uniform Delay, d1	40.4	21.4			35.4						38.9	
Progression Factor	1.00	1.00			1.00						1.00	
Incremental Delay, d2	12.0	0.8			9.8						1.0	
Delay (s)	52.4	22.2			45.3						39.9	
Level of Service	D	C			D						D	
Approach Delay (s)		28.9			45.3			0.0			39.9	
Approach LOS		C			D			A			D	

Intersection Summary			
HCM 2000 Control Delay	37.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	94.4	Sum of lost time (s)	23.1
Intersection Capacity Utilization	45.9%	ICU Level of Service	A
Analysis Period (min)	15		

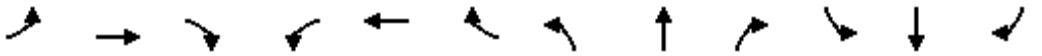
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	293	816	0	482	56	522	5	166	0	0	0
Future Volume (veh/h)	0	293	816	0	482	56	522	5	166	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	318	887	0	524	61	625	0	122			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	2148	1316	0	3087	958	805	0	358			
Arrive On Green	0.00	0.60	0.60	0.00	0.60	0.60	0.23	0.00	0.23			
Sat Flow, veh/h	0	3647	1585	0	5274	1585	3563	0	1585			
Grp Volume(v), veh/h	0	318	887	0	524	61	625	0	122			
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1702	1585	1781	0	1585			
Q Serve(g_s), s	0.0	3.1	17.3	0.0	3.6	1.3	13.2	0.0	5.2			
Cycle Q Clear(g_c), s	0.0	3.1	17.3	0.0	3.6	1.3	13.2	0.0	5.2			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2148	1316	0	3087	958	805	0	358			
V/C Ratio(X)	0.00	0.15	0.67	0.00	0.17	0.06	0.78	0.00	0.34			
Avail Cap(c_a), veh/h	0	2148	1316	0	3087	958	2127	0	946			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	6.9	2.6	0.0	7.0	6.5	29.1	0.0	26.0			
Incr Delay (d2), s/veh	0.0	0.1	2.8	0.0	0.0	0.0	1.7	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			
%ile BackOfQ(50%),veh/ln	0.0	1.1	13.0	0.0	1.2	0.4	5.6	0.0	2.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	7.0	5.4	0.0	7.0	6.6	30.8	0.0	26.6			
LnGrp LOS	A	A	A	A	A	A	C	A	C			
Approach Vol, veh/h		1205			585			747				
Approach Delay, s/veh		5.8			7.0			30.1				
Approach LOS		A			A			C				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		56.0				56.0		24.2				
Change Period (Y+Rc), s		7.5				7.5		6.1				
Max Green Setting (Gmax), s		48.5				48.5		47.9				
Max Q Clear Time (g_c+I1), s		19.3				5.6		15.2				
Green Ext Time (p_c), s		7.1				4.3		2.9				
Intersection Summary												
HCM 6th Ctrl Delay			13.2									
HCM 6th LOS			B									

Notes

User approved volume balancing among the lanes for turning movement.



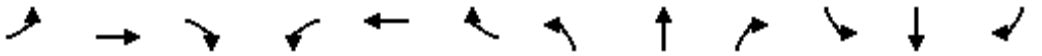
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↱		↑↑	↱				↰	✣	↱
Traffic Volume (veh/h)	0	985	375	0	764	172	0	0	0	98	7	595
Future Volume (veh/h)	0	985	375	0	764	172	0	0	0	98	7	595
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	1870	1870
Adj Flow Rate, veh/h	0	1071	408	0	830	187				74	0	688
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	2792	867	0	1943	1275				459	0	816
Arrive On Green	0.00	0.55	0.55	0.00	0.55	0.55				0.26	0.00	0.26
Sat Flow, veh/h	0	5274	1585	0	3647	1585				1781	0	3170
Grp Volume(v), veh/h	0	1071	408	0	830	187				74	0	688
Grp Sat Flow(s),veh/h/ln	0	1702	1585	0	1777	1585				1781	0	1585
Q Serve(g_s), s	0.0	8.4	10.9	0.0	9.6	1.8				2.2	0.0	14.3
Cycle Q Clear(g_c), s	0.0	8.4	10.9	0.0	9.6	1.8				2.2	0.0	14.3
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2792	867	0	1943	1275				459	0	816
V/C Ratio(X)	0.00	0.38	0.47	0.00	0.43	0.15				0.16	0.00	0.84
Avail Cap(c_a), veh/h	0	2792	867	0	1943	1275				459	0	816
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	9.0	9.6	0.0	9.3	1.5				20.0	0.0	24.5
Incr Delay (d2), s/veh	0.0	0.1	0.4	0.0	0.7	0.2				0.8	0.0	10.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.7	3.3	0.0	3.4	1.3				1.0	0.0	6.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	9.1	10.0	0.0	10.0	1.8				20.7	0.0	34.8
LnGrp LOS	A	A	B	A	B	A				C	A	C
Approach Vol, veh/h		1479			1017						762	
Approach Delay, s/veh		9.4			8.5						33.4	
Approach LOS		A			A						C	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		45.5		24.0		45.5						
Change Period (Y+Rc), s		7.5		6.1		7.5						
Max Green Setting (Gmax), s		28.0		17.9		38.0						
Max Q Clear Time (g_c+I1), s		12.9		16.3		11.6						
Green Ext Time (p_c), s		8.0		0.6		7.2						

Intersection Summary												
HCM 6th Ctrl Delay			14.7									
HCM 6th LOS			B									

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	1049	101	81	806	317	98	133	81	243	93	74
Future Volume (veh/h)	95	1049	101	81	806	317	98	133	81	243	93	74
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	103	1140	110	88	876	345	107	145	88	264	101	80
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	222	2215	687	218	1532	861	167	225	384	388	134	106
Arrive On Green	0.12	0.43	0.43	0.12	0.43	0.43	0.09	0.12	0.12	0.11	0.14	0.14
Sat Flow, veh/h	1781	5106	1585	1781	3554	1585	1781	1870	1585	3456	967	766
Grp Volume(v), veh/h	103	1140	110	88	876	345	107	145	88	264	0	181
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1777	1585	1781	1870	1585	1728	0	1733
Q Serve(g_s), s	6.7	20.3	5.3	5.7	23.2	15.8	7.2	9.2	5.6	9.2	0.0	12.5
Cycle Q Clear(g_c), s	6.7	20.3	5.3	5.7	23.2	15.8	7.2	9.2	5.6	9.2	0.0	12.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.44
Lane Grp Cap(c), veh/h	222	2215	687	218	1532	861	167	225	384	388	0	240
V/C Ratio(X)	0.46	0.51	0.16	0.40	0.57	0.40	0.64	0.64	0.23	0.68	0.00	0.75
Avail Cap(c_a), veh/h	228	2215	687	231	1547	868	204	858	921	585	0	889
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	50.7	25.8	21.5	50.6	26.8	16.6	54.5	52.3	37.9	53.2	0.0	51.7
Incr Delay (d2), s/veh	1.5	0.9	0.5	1.2	0.5	0.3	4.7	3.1	0.3	2.1	0.0	4.7
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	3.1	8.4	2.1	2.6	9.9	5.8	3.5	4.5	2.2	4.1	0.0	5.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	52.2	26.6	22.0	51.8	27.3	16.9	59.2	55.4	38.2	55.3	0.0	56.4
LnGrp LOS	D	C	C	D	C	B	E	E	D	E	A	E
Approach Vol, veh/h		1353			1309			340			445	
Approach Delay, s/veh		28.2			26.2			52.1			55.8	
Approach LOS		C			C			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.9	61.6	17.4	24.8	21.2	61.3	19.7	22.5
Change Period (Y+Rc), s	* 5.7	7.5	* 5.7	7.5	* 5.7	7.5	* 5.7	7.5
Max Green Setting (Gmax), s	* 16	54.1	* 14	64.0	* 16	54.3	* 21	57.2
Max Q Clear Time (g_c+I1), s	7.7	22.3	9.2	14.5	8.7	25.2	11.2	11.2
Green Ext Time (p_c), s	0.1	10.5	0.1	1.2	0.1	8.8	0.6	1.2

Intersection Summary	
HCM 6th Ctrl Delay	33.4
HCM 6th LOS	C

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	7.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	11	89	94	9	7	15
Future Vol, veh/h	11	89	94	9	7	15
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	-	-	-	-	-
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	12	97	102	10	8	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	230	16	24	0	-	0
Stage 1	16	-	-	-	-	-
Stage 2	214	-	-	-	-	-
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	758	1063	1591	-	-	-
Stage 1	1007	-	-	-	-	-
Stage 2	822	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	709	1063	1591	-	-	-
Mov Cap-2 Maneuver	709	-	-	-	-	-
Stage 1	943	-	-	-	-	-
Stage 2	822	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9	6.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1591	-	1008	-	-
HCM Lane V/C Ratio	0.064	-	0.108	-	-
HCM Control Delay (s)	7.4	0	9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0.4	-	-

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕		↰	↱			↕	
Traffic Vol, veh/h	0	0	4	26	0	28	1	77	40	45	53	0
Future Vol, veh/h	0	0	4	26	0	28	1	77	40	45	53	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	4	28	0	30	1	84	43	49	58	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	279	285	58	266	264	106	58	0	0	127	0	0
Stage 1	156	156	-	108	108	-	-	-	-	-	-	-
Stage 2	123	129	-	158	156	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	673	624	1008	687	641	948	1546	-	-	1459	-	-
Stage 1	846	769	-	897	806	-	-	-	-	-	-	-
Stage 2	881	789	-	844	769	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	634	602	1008	666	618	948	1546	-	-	1459	-	-
Mov Cap-2 Maneuver	634	602	-	666	618	-	-	-	-	-	-	-
Stage 1	845	742	-	896	805	-	-	-	-	-	-	-
Stage 2	852	788	-	811	742	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.6	9.9	0.1	3.5
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1546	-	-	1008	787	1459	-	-
HCM Lane V/C Ratio	0.001	-	-	0.004	0.075	0.034	-	-
HCM Control Delay (s)	7.3	-	-	8.6	9.9	7.6	0	-
HCM Lane LOS	A	-	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.2	0.1	-	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	32	0	14	0	106	77	22	64	0
Future Vol, veh/h	0	0	0	32	0	14	0	106	77	22	64	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	-	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	35	0	15	0	115	84	24	70	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	283	317	70	275	275	157	70	0	0	199	0	0
Stage 1	118	118	-	157	157	-	-	-	-	-	-	-
Stage 2	165	199	-	118	118	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	669	599	993	677	632	889	1531	-	-	1373	-	-
Stage 1	887	798	-	845	768	-	-	-	-	-	-	-
Stage 2	837	736	-	887	798	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	648	588	993	668	621	889	1531	-	-	1373	-	-
Mov Cap-2 Maneuver	648	588	-	668	621	-	-	-	-	-	-	-
Stage 1	887	784	-	845	768	-	-	-	-	-	-	-
Stage 2	823	736	-	871	784	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	10.3	0	2
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1531	-	-	-	-	723	1373	-	-
HCM Lane V/C Ratio	-	-	-	-	-	0.069	0.017	-	-
HCM Control Delay (s)	0	-	-	0	0	10.3	7.7	0	-
HCM Lane LOS	A	-	-	A	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	-	0.2	0.1	-	-

Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	15	11	168	23	5	90
Future Vol, veh/h	15	11	168	23	5	90
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	-	-	-	-	-
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	16	12	183	25	5	98

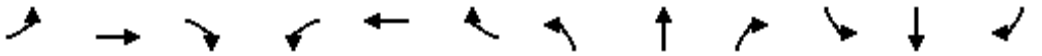
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	304	196	0	0	208	0
Stage 1	196	-	-	-	-	-
Stage 2	108	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	688	845	-	-	1363	-
Stage 1	837	-	-	-	-	-
Stage 2	916	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	685	845	-	-	1363	-
Mov Cap-2 Maneuver	685	-	-	-	-	-
Stage 1	834	-	-	-	-	-
Stage 2	916	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10	0	0.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	745	1363	-
HCM Lane V/C Ratio	-	-	0.038	0.004	-
HCM Control Delay (s)	-	-	10	7.7	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.1	0	-

Appendix C: Synchro Reports – Near Term

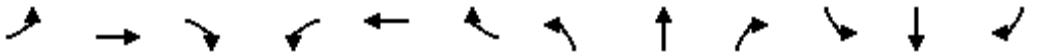
HCM 6th Edition methodology expects strict NEMA phasing.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	627	0	0	552	31	0	0	0	73	0	170
Future Volume (vph)	72	627	0	0	552	31	0	0	0	73	0	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	7.5			7.5	7.5				5.8	5.8	5.8
Lane Util. Factor	0.97	0.95			0.95	1.00				0.95	0.91	0.95
Frt	1.00	1.00			1.00	0.85				1.00	0.86	0.85
Flt Protected	0.95	1.00			1.00	1.00				0.95	1.00	1.00
Satd. Flow (prot)	3433	3539			3539	1583				1681	1456	1504
Flt Permitted	0.95	1.00			1.00	1.00				0.76	0.99	1.00
Satd. Flow (perm)	3433	3539			3539	1583				1340	1440	1504
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	78	682	0	0	600	34	0	0	0	79	0	185
RTOR Reduction (vph)	0	0	0	0	0	25	0	0	0	0	71	70
Lane Group Flow (vph)	78	682	0	0	600	9	0	0	0	71	26	26
Turn Type	Prot	NA		Prot	NA	Perm				Perm	NA	Perm
Protected Phases	5	2		1	6			3			4	
Permitted Phases						6	3			4		4
Actuated Green, G (s)	6.0	43.8			33.1	33.1				34.8	34.8	34.8
Effective Green, g (s)	6.0	43.8			33.1	33.1				34.8	34.8	34.8
Actuated g/C Ratio	0.05	0.34			0.26	0.26				0.27	0.27	0.27
Clearance Time (s)	4.7	7.5			7.5	7.5				5.8	5.8	5.8
Vehicle Extension (s)	3.0	3.0			3.0	3.0				3.0	3.0	3.0
Lane Grp Cap (vph)	160	1206			911	407				362	389	407
v/s Ratio Prot	0.02	c0.19			c0.17							
v/s Ratio Perm						0.01				c0.05	0.02	0.02
v/c Ratio	0.49	0.57			0.66	0.02				0.20	0.07	0.06
Uniform Delay, d1	59.8	34.6			42.6	35.6				36.1	34.8	34.8
Progression Factor	1.00	1.00			1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2	2.3	1.9			3.7	0.1				1.2	0.3	0.3
Delay (s)	62.1	36.5			46.4	35.7				37.3	35.1	35.1
Level of Service	E	D			D	D				D	D	D
Approach Delay (s)		39.1			45.8			0.0			35.7	
Approach LOS		D			D			A			D	

Intersection Summary			
HCM 2000 Control Delay	41.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	128.5	Sum of lost time (s)	23.1
Intersection Capacity Utilization	47.3%	ICU Level of Service	A
Analysis Period (min)	15		

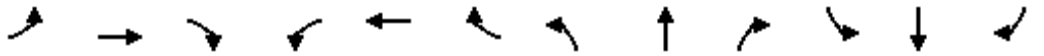
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	389	812	0	335	82	269	0	233	0	0	0
Future Volume (veh/h)	0	389	812	0	335	82	269	0	233	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	423	883	0	364	89	371	0	169			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	2357	1296	0	3387	1051	550	0	245			
Arrive On Green	0.00	0.66	0.66	0.00	0.66	0.66	0.15	0.00	0.15			
Sat Flow, veh/h	0	3647	1585	0	5274	1585	3563	0	1585			
Grp Volume(v), veh/h	0	423	883	0	364	89	371	0	169			
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1702	1585	1781	0	1585			
Q Serve(g_s), s	0.0	3.4	17.1	0.0	1.9	1.5	7.3	0.0	7.5			
Cycle Q Clear(g_c), s	0.0	3.4	17.1	0.0	1.9	1.5	7.3	0.0	7.5			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2357	1296	0	3387	1051	550	0	245			
V/C Ratio(X)	0.00	0.18	0.68	0.00	0.11	0.08	0.67	0.00	0.69			
Avail Cap(c_a), veh/h	0	2357	1296	0	3387	1051	2239	0	996			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	4.8	2.8	0.0	4.6	4.5	29.8	0.0	29.9			
Incr Delay (d2), s/veh	0.0	0.2	2.9	0.0	0.0	0.0	1.5	0.0	3.5			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	1.0	9.2	0.0	0.5	0.4	3.1	0.0	3.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	5.0	5.7	0.0	4.6	4.5	31.2	0.0	33.3			
LnGrp LOS	A	A	A	A	A	A	C	A	C			
Approach Vol, veh/h		1306			453			540				
Approach Delay, s/veh		5.5			4.6			31.9				
Approach LOS		A			A			C				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		57.0				57.0		17.6				
Change Period (Y+Rc), s		7.5				7.5		6.1				
Max Green Setting (Gmax), s		49.5				49.5		46.9				
Max Q Clear Time (g_c+I1), s		19.1				3.9		9.5				
Green Ext Time (p_c), s		8.2				3.0		2.0				
Intersection Summary												
HCM 6th Ctrl Delay			11.5									
HCM 6th LOS			B									

Notes

User approved volume balancing among the lanes for turning movement.



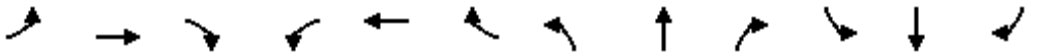
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↱		↑↑	↱				↰	✣	↱
Traffic Volume (veh/h)	0	959	596	0	485	108	0	0	0	96	2	1105
Future Volume (veh/h)	0	959	596	0	485	108	0	0	0	96	2	1105
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	1870	1870
Adj Flow Rate, veh/h	0	1042	648	0	527	117				70	0	1239
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	2352	730	0	1637	1324				667	0	1187
Arrive On Green	0.00	0.46	0.46	0.00	0.46	0.46				0.37	0.00	0.37
Sat Flow, veh/h	0	5274	1585	0	3647	1585				1781	0	3170
Grp Volume(v), veh/h	0	1042	648	0	527	117				70	0	1239
Grp Sat Flow(s),veh/h/ln	0	1702	1585	0	1777	1585				1781	0	1585
Q Serve(g_s), s	0.0	11.4	30.8	0.0	7.7	1.1				2.1	0.0	30.9
Cycle Q Clear(g_c), s	0.0	11.4	30.8	0.0	7.7	1.1				2.1	0.0	30.9
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2352	730	0	1637	1324				667	0	1187
V/C Ratio(X)	0.00	0.44	0.89	0.00	0.32	0.09				0.10	0.00	1.04
Avail Cap(c_a), veh/h	0	2352	730	0	1637	1324				667	0	1187
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	15.1	20.3	0.0	14.1	1.2				16.8	0.0	25.8
Incr Delay (d2), s/veh	0.0	0.1	12.8	0.0	0.5	0.1				0.3	0.0	38.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.2	13.0	0.0	3.0	1.2				0.9	0.0	17.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	15.2	33.1	0.0	14.6	1.3				17.1	0.0	64.0
LnGrp LOS	A	B	C	A	B	A				B	A	F
Approach Vol, veh/h		1690			644						1309	
Approach Delay, s/veh		22.1			12.2						61.5	
Approach LOS		C			B						E	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		45.5		37.0		45.5						
Change Period (Y+Rc), s		7.5		6.1		7.5						
Max Green Setting (Gmax), s		30.0		30.9		38.0						
Max Q Clear Time (g_c+I1), s		32.8		32.9		9.7						
Green Ext Time (p_c), s		0.0		0.0		4.2						

Intersection Summary												
HCM 6th Ctrl Delay			34.5									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	96	1025	148	98	1046	146	185	135	125	490	146	81
Future Volume (veh/h)	96	1025	148	98	1046	146	185	135	125	490	146	81
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	104	1114	161	107	1137	159	201	147	136	533	159	88
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	211	1997	620	212	1391	900	193	213	369	610	206	114
Arrive On Green	0.12	0.39	0.39	0.12	0.39	0.39	0.11	0.11	0.11	0.18	0.18	0.18
Sat Flow, veh/h	1781	5106	1585	1781	3554	1585	1781	1870	1585	3456	1131	626
Grp Volume(v), veh/h	104	1114	161	107	1137	159	201	147	136	533	0	247
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1777	1585	1781	1870	1585	1728	0	1758
Q Serve(g_s), s	7.2	22.4	9.1	7.4	37.8	6.4	14.3	10.0	9.5	19.8	0.0	17.7
Cycle Q Clear(g_c), s	7.2	22.4	9.1	7.4	37.8	6.4	14.3	10.0	9.5	19.8	0.0	17.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.36
Lane Grp Cap(c), veh/h	211	1997	620	212	1391	900	193	213	369	610	0	319
V/C Ratio(X)	0.49	0.56	0.26	0.51	0.82	0.18	1.04	0.69	0.37	0.87	0.00	0.77
Avail Cap(c_a), veh/h	216	1997	620	252	1462	932	193	665	752	822	0	852
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	54.4	31.3	27.2	54.5	36.0	13.7	58.8	56.3	42.5	52.9	0.0	51.4
Incr Delay (d2), s/veh	1.8	1.1	1.0	1.9	3.6	0.1	76.1	4.0	0.6	8.1	0.0	4.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	9.4	3.7	3.5	16.9	0.0	10.5	5.0	3.8	9.3	0.0	8.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.2	32.4	28.3	56.4	39.6	13.8	134.9	60.2	43.1	61.0	0.0	55.4
LnGrp LOS	E	C	C	E	D	B	F	E	D	E	A	E
Approach Vol, veh/h		1379			1403			484			780	
Approach Delay, s/veh		33.7			37.9			86.4			59.2	
Approach LOS		C			D			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.4	59.1	20.0	31.5	21.3	59.1	29.0	22.5
Change Period (Y+Rc), s	* 5.7	7.5	* 5.7	7.5	* 5.7	7.5	* 5.7	7.5
Max Green Setting (Gmax), s	* 19	51.6	* 14	64.0	* 16	54.3	* 31	46.9
Max Q Clear Time (g_c+I1), s	9.4	24.4	16.3	19.7	9.2	39.8	21.8	12.0
Green Ext Time (p_c), s	0.2	10.0	0.0	1.7	0.1	7.6	1.5	1.3

Intersection Summary	
HCM 6th Ctrl Delay	46.4
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

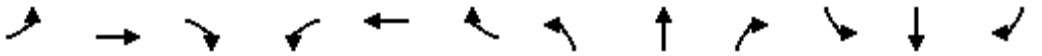
Intersection	
Int Delay, s/veh	6.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	65	93	8	3	15
Future Vol, veh/h	6	65	93	8	3	15
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	-	-	-	-	-
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	7	71	101	9	3	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	222	11	19	0	-	0
Stage 1	11	-	-	-	-	-
Stage 2	211	-	-	-	-	-
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	766	1070	1597	-	-	-
Stage 1	1012	-	-	-	-	-
Stage 2	824	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	717	1070	1597	-	-	-
Mov Cap-2 Maneuver	717	-	-	-	-	-
Stage 1	947	-	-	-	-	-
Stage 2	824	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.8	6.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1597	-	1027	-	-
HCM Lane V/C Ratio	0.063	-	0.075	-	-
HCM Control Delay (s)	7.4	0	8.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	-	-



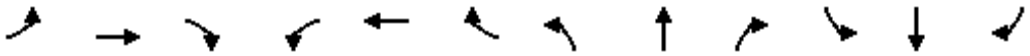
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	41	0	52	1	44	17	36	37	0
Future Volume (veh/h)	0	0	0	41	0	52	1	44	17	36	37	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	45	0	57	1	48	18	39	40	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	8	9	0	188	0	167	8	428	362	86	515	437
Arrive On Green	0.00	0.00	0.00	0.11	0.00	0.11	0.00	0.23	0.23	0.05	0.28	0.00
Sat Flow, veh/h	1781	1870	0	1781	0	1585	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	0	0	0	45	0	57	1	48	18	39	40	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	0	1585	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	0.0	0.0	0.0	0.5	0.0	0.7	0.0	0.4	0.2	0.5	0.3	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.5	0.0	0.7	0.0	0.4	0.2	0.5	0.3	0.0
Prop In Lane	1.00		0.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	8	9	0	188	0	167	8	428	362	86	515	437
V/C Ratio(X)	0.00	0.00	0.00	0.24	0.00	0.34	0.12	0.11	0.05	0.45	0.08	0.00
Avail Cap(c_a), veh/h	1467	1540	0	1507	0	1341	448	1625	1377	530	1711	1450
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	9.0	0.0	9.1	10.9	6.7	6.6	10.1	5.9	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.6	0.0	1.2	6.6	0.1	0.1	3.7	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.2	0.0	0.2	0.0	0.1	0.0	0.2	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	9.6	0.0	10.3	17.4	6.8	6.6	13.8	5.9	0.0
LnGrp LOS	A	A	A	A	A	B	B	A	A	B	A	A
Approach Vol, veh/h		0			102			67			79	
Approach Delay, s/veh		0.0			10.0			6.9			9.8	
Approach LOS					A			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.6	9.5		0.0	4.5	10.5		6.8				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	6.5	19.0		18.0	5.5	20.0		18.5				
Max Q Clear Time (g_c+I1), s	2.5	2.4		0.0	2.0	2.3		2.7				
Green Ext Time (p_c), s	0.0	0.2		0.0	0.0	0.1		0.3				

Intersection Summary												
HCM 6th Ctrl Delay			9.1									
HCM 6th LOS			A									

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	76	0	19	0	46	21	12	71	0
Future Volume (veh/h)	0	0	0	76	0	19	0	46	21	12	71	0
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	52	43	21	0	50	23	13	77	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	8	9	0	207	138	67	8	566	244	31	1642	0
Arrive On Green	0.00	0.00	0.00	0.12	0.12	0.12	0.00	0.23	0.23	0.02	0.46	0.00
Sat Flow, veh/h	1781	1870	0	1781	1187	579	1781	2418	1042	1781	3647	0
Grp Volume(v), veh/h	0	0	0	52	0	64	0	36	37	13	77	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	0	1766	1781	1777	1683	1781	1777	0
Q Serve(g_s), s	0.0	0.0	0.0	0.6	0.0	0.7	0.0	0.3	0.4	0.2	0.3	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.6	0.0	0.7	0.0	0.3	0.4	0.2	0.3	0.0
Prop In Lane	1.00		0.00	1.00		0.33	1.00		0.62	1.00		0.00
Lane Grp Cap(c), veh/h	8	9	0	207	0	206	8	416	394	31	1642	0
V/C Ratio(X)	0.00	0.00	0.00	0.25	0.00	0.31	0.00	0.09	0.09	0.42	0.05	0.00
Avail Cap(c_a), veh/h	1501	1576	0	1543	0	1530	417	1664	1576	459	3411	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	8.6	0.0	8.7	0.0	6.4	6.4	10.4	3.2	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.6	0.0	0.9	0.0	0.1	0.1	8.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.2	0.0	0.2	0.0	0.1	0.1	0.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	9.2	0.0	9.5	0.0	6.5	6.5	19.2	3.2	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	B	A	A
Approach Vol, veh/h		0			116			73			90	
Approach Delay, s/veh		0.0			9.4			6.5			5.5	
Approach LOS					A			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	4.9	9.5		0.0	0.0	14.4		7.0				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	20.0		18.0	5.0	20.5		18.5				
Max Q Clear Time (g_c+I1), s	2.2	2.4		0.0	0.0	2.3		2.7				
Green Ext Time (p_c), s	0.0	0.3		0.0	0.0	0.3		0.4				

Intersection Summary		
HCM 6th Ctrl Delay		7.4
HCM 6th LOS		A

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	85	0	27	0	144	49	27	305	0
Future Volume (veh/h)	0	0	0	85	0	27	0	144	49	27	305	0
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	60	44	29	0	157	53	29	332	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	8	8	0	225	133	88	8	596	194	66	1658	0
Arrive On Green	0.00	0.00	0.00	0.13	0.13	0.13	0.00	0.23	0.23	0.04	0.47	0.00
Sat Flow, veh/h	1781	1870	0	1781	1052	693	1781	2634	859	1781	3647	0
Grp Volume(v), veh/h	0	0	0	60	0	73	0	104	106	29	332	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	0	1746	1781	1777	1716	1781	1777	0
Q Serve(g_s), s	0.0	0.0	0.0	0.7	0.0	0.8	0.0	1.1	1.1	0.4	1.2	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.7	0.0	0.8	0.0	1.1	1.1	0.4	1.2	0.0
Prop In Lane	1.00		0.00	1.00		0.40	1.00		0.50	1.00		0.00
Lane Grp Cap(c), veh/h	8	8	0	225	0	220	8	402	388	66	1658	0
V/C Ratio(X)	0.00	0.00	0.00	0.27	0.00	0.33	0.00	0.26	0.27	0.44	0.20	0.00
Avail Cap(c_a), veh/h	1450	1523	0	1491	0	1461	403	1591	1537	459	3295	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	8.7	0.0	8.8	0.0	7.0	7.1	10.4	3.5	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.6	0.0	0.9	0.0	0.3	0.4	4.6	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.2	0.0	0.2	0.0	0.2	0.3	0.2	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	9.4	0.0	9.7	0.0	7.4	7.4	15.0	3.5	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	B	A	A
Approach Vol, veh/h		0			133			210			361	
Approach Delay, s/veh		0.0			9.5			7.4			4.4	
Approach LOS					A			A			A	

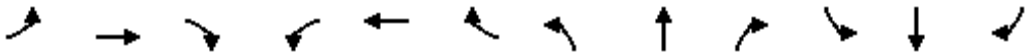
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.3	9.5		0.0	0.0	14.8		7.3				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.7	19.8		18.0	5.0	20.5		18.5				
Max Q Clear Time (g_c+I1), s	2.4	3.1		0.0	0.0	3.2		2.8				
Green Ext Time (p_c), s	0.0	1.0		0.0	0.0	1.9		0.4				

Intersection Summary												
HCM 6th Ctrl Delay			6.3									
HCM 6th LOS			A									

Notes

User approved volume balancing among the lanes for turning movement.

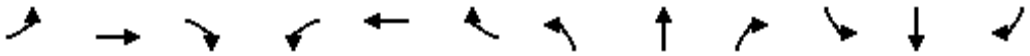
HCM 6th Edition methodology expects strict NEMA phasing.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	192	676	0	0	731	82	0	0	0	46	0	106
Future Volume (vph)	192	676	0	0	731	82	0	0	0	46	0	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	7.5			7.5	7.5					5.8	
Lane Util. Factor	0.97	0.95			0.95	1.00					1.00	
Frt	1.00	1.00			1.00	0.85					0.91	
Flt Protected	0.95	1.00			1.00	1.00					0.99	
Satd. Flow (prot)	3433	3539			3539	1583					1662	
Flt Permitted	0.95	1.00			1.00	1.00					0.91	
Satd. Flow (perm)	3433	3539			3539	1583					1533	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	209	735	0	0	795	89	0	0	0	50	0	115
RTOR Reduction (vph)	0	0	0	0	0	64	0	0	0	0	83	0
Lane Group Flow (vph)	209	735	0	0	795	25	0	0	0	0	82	0
Turn Type	Prot	NA		Prot	NA	Perm	Perm		Perm	Perm	NA	
Protected Phases	5	2		1	6			3			4	
Permitted Phases						6	3		3	4		
Actuated Green, G (s)	11.8	55.0			38.5	38.5					34.7	
Effective Green, g (s)	11.8	55.0			38.5	38.5					34.7	
Actuated g/C Ratio	0.08	0.39			0.28	0.28					0.25	
Clearance Time (s)	4.7	7.5			7.5	7.5					5.8	
Vehicle Extension (s)	3.0	3.0			3.0	3.0					3.0	
Lane Grp Cap (vph)	290	1395			976	436					381	
v/s Ratio Prot	c0.06	0.21			c0.22							
v/s Ratio Perm						0.02					c0.05	
v/c Ratio	0.72	0.53			0.81	0.06					0.21	
Uniform Delay, d1	62.2	32.3			47.2	37.1					41.6	
Progression Factor	1.00	1.00			1.00	1.00					1.00	
Incremental Delay, d2	8.5	1.4			7.4	0.2					1.3	
Delay (s)	70.8	33.7			54.6	37.4					42.9	
Level of Service	E	C			D	D					D	
Approach Delay (s)		41.9			52.9			0.0			42.9	
Approach LOS		D			D			A			D	

Intersection Summary			
HCM 2000 Control Delay	46.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	139.5	Sum of lost time (s)	23.1
Intersection Capacity Utilization	50.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



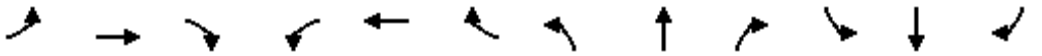
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	427	1191	0	704	100	762	8	243	0	0	0
Future Volume (veh/h)	0	427	1191	0	704	100	762	8	243	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	464	1295	0	765	109	914	0	179			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	1902	1342	0	2733	848	1110	0	494			
Arrive On Green	0.00	0.54	0.54	0.00	0.54	0.54	0.31	0.00	0.31			
Sat Flow, veh/h	0	3647	1585	0	5274	1585	3563	0	1585			
Grp Volume(v), veh/h	0	464	1295	0	765	109	914	0	179			
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1702	1585	1781	0	1585			
Q Serve(g_s), s	0.0	6.2	47.5	0.0	7.3	3.0	21.1	0.0	7.8			
Cycle Q Clear(g_c), s	0.0	6.2	47.5	0.0	7.3	3.0	21.1	0.0	7.8			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1902	1342	0	2733	848	1110	0	494			
V/C Ratio(X)	0.00	0.24	0.96	0.00	0.28	0.13	0.82	0.00	0.36			
Avail Cap(c_a), veh/h	0	1902	1342	0	2733	848	1963	0	873			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	11.0	4.7	0.0	11.3	10.3	28.3	0.0	23.7			
Incr Delay (d2), s/veh	0.0	0.3	17.5	0.0	0.1	0.1	1.6	0.0	0.4			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	2.4	34.7	0.0	2.6	1.0	8.9	0.0	2.9			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	11.3	22.2	0.0	11.3	10.4	29.9	0.0	24.2			
LnGrp LOS	A	B	C	A	B	B	C	A	C			
Approach Vol, veh/h		1759			874			1093				
Approach Delay, s/veh		19.3			11.2			29.0				
Approach LOS		B			B			C				

Timer - Assigned Phs	2	6	8
Phs Duration (G+Y+Rc), s	55.0	55.0	33.7
Change Period (Y+Rc), s	7.5	7.5	6.1
Max Green Setting (Gmax), s	47.5	47.5	48.9
Max Q Clear Time (g_c+I1), s	49.5	9.3	23.1
Green Ext Time (p_c), s	0.0	6.7	4.6

Intersection Summary	
HCM 6th Ctrl Delay	20.2
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↱		↑↑	↱				↰	✣	↱
Traffic Volume (veh/h)	0	1438	548	0	1115	251	0	0	0	142	10	868
Future Volume (veh/h)	0	1438	548	0	1115	251	0	0	0	142	10	868
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	1870	1870
Adj Flow Rate, veh/h	0	1563	596	0	1212	273				106	0	1001
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	2853	886	0	1986	1268				430	0	765
Arrive On Green	0.00	0.56	0.56	0.00	0.56	0.56				0.24	0.00	0.24
Sat Flow, veh/h	0	5274	1585	0	3647	1585				1781	0	3170
Grp Volume(v), veh/h	0	1563	596	0	1212	273				106	0	1001
Grp Sat Flow(s),veh/h/ln	0	1702	1585	0	1777	1585				1781	0	1585
Q Serve(g_s), s	0.0	13.2	18.1	0.0	15.5	2.8				3.3	0.0	16.4
Cycle Q Clear(g_c), s	0.0	13.2	18.1	0.0	15.5	2.8				3.3	0.0	16.4
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2853	886	0	1986	1268				430	0	765
V/C Ratio(X)	0.00	0.55	0.67	0.00	0.61	0.22				0.25	0.00	1.31
Avail Cap(c_a), veh/h	0	2853	886	0	1986	1268				430	0	765
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	9.5	10.6	0.0	10.0	1.6				20.8	0.0	25.8
Incr Delay (d2), s/veh	0.0	0.2	2.0	0.0	1.4	0.4				1.4	0.0	148.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.1	5.7	0.0	5.4	1.9				1.5	0.0	21.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	9.8	12.6	0.0	11.5	2.0				22.2	0.0	174.3
LnGrp LOS	A	A	B	A	B	A				C	A	F
Approach Vol, veh/h		2159			1485						1107	
Approach Delay, s/veh		10.5			9.7						159.7	
Approach LOS		B			A						F	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		45.5		22.5		45.5						
Change Period (Y+Rc), s		7.5		6.1		7.5						
Max Green Setting (Gmax), s		29.5		16.4		38.0						
Max Q Clear Time (g_c+I1), s		20.1		18.4		17.5						
Green Ext Time (p_c), s		7.6		0.0		10.3						

Intersection Summary												
HCM 6th Ctrl Delay			45.1									
HCM 6th LOS			D									

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	137	1500	144	115	1152	454	140	190	115	348	133	106
Future Volume (veh/h)	137	1500	144	115	1152	454	140	190	115	348	133	106
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	149	1630	157	125	1252	493	152	207	125	378	145	115
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	212	2142	665	210	1489	869	163	255	403	448	168	133
Arrive On Green	0.12	0.42	0.42	0.12	0.42	0.42	0.09	0.14	0.14	0.13	0.17	0.17
Sat Flow, veh/h	1781	5106	1585	1781	3554	1585	1781	1870	1585	3456	966	766
Grp Volume(v), veh/h	149	1630	157	125	1252	493	152	207	125	378	0	260
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1777	1585	1781	1870	1585	1728	0	1732
Q Serve(g_s), s	10.8	36.5	8.6	8.9	42.4	27.4	11.4	14.4	8.6	14.3	0.0	19.6
Cycle Q Clear(g_c), s	10.8	36.5	8.6	8.9	42.4	27.4	11.4	14.4	8.6	14.3	0.0	19.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.44
Lane Grp Cap(c), veh/h	212	2142	665	210	1489	869	163	255	403	448	0	301
V/C Ratio(X)	0.70	0.76	0.24	0.59	0.84	0.57	0.93	0.81	0.31	0.84	0.00	0.86
Avail Cap(c_a), veh/h	212	2142	665	212	1491	870	163	683	766	703	0	826
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	56.9	33.2	25.1	56.1	35.0	19.9	60.5	56.3	40.5	57.1	0.0	53.9
Incr Delay (d2), s/veh	10.0	2.6	0.8	4.3	4.5	0.9	50.5	6.2	0.4	5.6	0.0	7.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	15.5	3.4	4.3	19.1	10.2	7.4	7.3	3.4	6.6	0.0	9.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.9	35.8	25.9	60.5	39.5	20.7	111.0	62.5	41.0	62.6	0.0	61.1
LnGrp LOS	E	D	C	E	D	C	F	E	D	E	A	E
Approach Vol, veh/h		1936			1870			484			638	
Approach Delay, s/veh		37.4			35.9			72.2			62.0	
Approach LOS		D			D			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.5	63.8	18.0	30.8	21.6	63.7	23.1	25.8
Change Period (Y+Rc), s	* 5.7	7.5	* 5.7	7.5	* 5.7	7.5	* 5.7	7.5
Max Green Setting (Gmax), s	* 16	56.3	* 12	64.0	* 16	56.3	* 27	49.0
Max Q Clear Time (g_c+I1), s	10.9	38.5	13.4	21.6	12.8	44.4	16.3	16.4
Green Ext Time (p_c), s	0.1	11.7	0.0	1.8	0.1	8.0	1.0	1.7

Intersection Summary	
HCM 6th Ctrl Delay	43.5
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	9.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	390	307	25	19	17
Future Vol, veh/h	13	390	307	25	19	17
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	-	-	-	-	-
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	14	424	334	27	21	18

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	725	30	39	0	-	0
Stage 1	30	-	-	-	-	-
Stage 2	695	-	-	-	-	-
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	392	1044	1571	-	-	-
Stage 1	993	-	-	-	-	-
Stage 2	495	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	307	1044	1571	-	-	-
Mov Cap-2 Maneuver	307	-	-	-	-	-
Stage 1	779	-	-	-	-	-
Stage 2	495	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.7	7.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1571	-	969	-	-
HCM Lane V/C Ratio	0.212	-	0.452	-	-
HCM Control Delay (s)	7.9	0	11.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.8	-	2.4	-	-

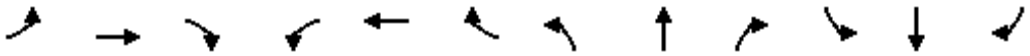
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	0	14	102	12	33	53	274	120	55	311	43
Future Volume (veh/h)	24	0	14	102	12	33	53	274	120	55	311	43
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	26	0	15	80	56	36	58	298	130	60	338	47
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	83	0	74	205	123	79	109	498	422	112	500	424
Arrive On Green	0.05	0.00	0.05	0.12	0.12	0.12	0.06	0.27	0.27	0.06	0.27	0.27
Sat Flow, veh/h	1781	0	1585	1781	1064	684	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	26	0	15	80	0	92	58	298	130	60	338	47
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	0	1747	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	0.5	0.0	0.3	1.5	0.0	1.7	1.1	4.9	2.3	1.2	5.7	0.8
Cycle Q Clear(g_c), s	0.5	0.0	0.3	1.5	0.0	1.7	1.1	4.9	2.3	1.2	5.7	0.8
Prop In Lane	1.00		1.00	1.00		0.39	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	83	0	74	205	0	201	109	498	422	112	500	424
V/C Ratio(X)	0.31	0.00	0.20	0.39	0.00	0.46	0.53	0.60	0.31	0.53	0.68	0.11
Avail Cap(c_a), veh/h	906	0	807	906	0	889	277	1084	919	277	1084	919
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	16.3	0.0	16.2	14.5	0.0	14.6	16.1	11.3	10.4	16.1	11.6	9.8
Incr Delay (d2), s/veh	2.1	0.0	1.3	1.2	0.0	1.6	3.9	1.2	0.4	3.9	1.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.1	0.6	0.0	0.7	0.5	1.7	0.7	0.5	2.0	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.4	0.0	17.5	15.7	0.0	16.2	20.0	12.5	10.8	20.0	13.2	9.9
LnGrp LOS	B	A	B	B	A	B	C	B	B	B	B	A
Approach Vol, veh/h		41			172			486			445	
Approach Delay, s/veh		18.1			16.0			12.9			13.7	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.7	13.9		6.2	6.7	14.0		8.6				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	20.5		18.0	5.5	20.5		18.0				
Max Q Clear Time (g_c+I1), s	3.2	6.9		2.5	3.1	7.7		3.7				
Green Ext Time (p_c), s	0.0	1.8		0.1	0.0	1.8		0.6				

Intersection Summary			
HCM 6th Ctrl Delay		13.9	
HCM 6th LOS		B	

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	15	58	111	12	14	127	434	162	22	362	51
Future Volume (veh/h)	6	15	58	111	12	14	127	434	162	22	362	51
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	7	16	63	144	0	0	138	472	176	24	393	55
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	141	26	103	370	194	0	182	773	286	53	727	101
Arrive On Green	0.08	0.08	0.08	0.10	0.00	0.00	0.10	0.30	0.30	0.03	0.23	0.23
Sat Flow, veh/h	1781	331	1304	3563	1870	0	1781	2538	940	1781	3133	435
Grp Volume(v), veh/h	7	0	79	144	0	0	138	329	319	24	222	226
Grp Sat Flow(s),veh/h/ln	1781	0	1636	1781	1870	0	1781	1777	1701	1781	1777	1792
Q Serve(g_s), s	0.1	0.0	1.7	1.4	0.0	0.0	2.8	5.9	6.0	0.5	4.1	4.1
Cycle Q Clear(g_c), s	0.1	0.0	1.7	1.4	0.0	0.0	2.8	5.9	6.0	0.5	4.1	4.1
Prop In Lane	1.00		0.80	1.00		0.00	1.00		0.55	1.00		0.24
Lane Grp Cap(c), veh/h	141	0	129	370	194	0	182	541	518	53	412	416
V/C Ratio(X)	0.05	0.00	0.61	0.39	0.00	0.00	0.76	0.61	0.62	0.46	0.54	0.54
Avail Cap(c_a), veh/h	860	0	790	1721	903	0	359	997	954	244	882	890
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.9	0.0	16.6	15.6	0.0	0.0	16.3	11.1	11.1	17.8	12.6	12.6
Incr Delay (d2), s/veh	0.1	0.0	4.6	0.7	0.0	0.0	6.4	1.1	1.2	6.1	1.1	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	0.1	0.0	0.7	0.5	0.0	0.0	1.3	1.9	1.9	0.3	1.4	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.0	0.0	21.2	16.3	0.0	0.0	22.7	12.2	12.3	23.8	13.7	13.7
LnGrp LOS	B	A	C	B	A	A	C	B	B	C	B	B
Approach Vol, veh/h		86			144			786			472	
Approach Delay, s/veh		20.8			16.3			14.1			14.2	
Approach LOS		C			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.6	15.8		7.4	8.3	13.1		8.4				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.1	20.9		18.0	7.5	18.5		18.0				
Max Q Clear Time (g_c+I1), s	2.5	8.0		3.7	4.8	6.1		3.4				
Green Ext Time (p_c), s	0.0	3.4		0.3	0.1	2.1		0.4				

Intersection Summary			
HCM 6th Ctrl Delay		14.7	
HCM 6th LOS		B	

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	55	0	34	0	374	79	31	212	0
Future Volume (veh/h)	0	0	0	55	0	34	0	374	79	31	212	0
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	48	16	37	0	407	86	34	230	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	7	8	0	181	51	118	7	887	186	75	1883	0
Arrive On Green	0.00	0.00	0.00	0.10	0.10	0.10	0.00	0.30	0.30	0.04	0.53	0.00
Sat Flow, veh/h	1781	1870	0	1781	502	1160	1781	2924	613	1781	3647	0
Grp Volume(v), veh/h	0	0	0	48	0	53	0	246	247	34	230	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	0	1662	1781	1777	1760	1781	1777	0
Q Serve(g_s), s	0.0	0.0	0.0	0.6	0.0	0.7	0.0	2.7	2.8	0.5	0.8	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.6	0.0	0.7	0.0	2.7	2.8	0.5	0.8	0.0
Prop In Lane	1.00		0.00	1.00		0.70	1.00		0.35	1.00		0.00
Lane Grp Cap(c), veh/h	7	8	0	181	0	169	7	539	534	75	1883	0
V/C Ratio(X)	0.00	0.00	0.00	0.27	0.00	0.31	0.00	0.46	0.46	0.45	0.12	0.00
Avail Cap(c_a), veh/h	1313	1379	0	1320	0	1232	365	1455	1442	430	3042	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	10.1	0.0	10.2	0.0	6.9	6.9	11.4	2.9	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.8	0.0	1.1	0.0	0.6	0.6	4.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.2	0.0	0.2	0.0	0.6	0.6	0.2	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	10.9	0.0	11.2	0.0	7.5	7.5	15.6	2.9	0.0
LnGrp LOS	A	A	A	B	A	B	A	A	A	B	A	A
Approach Vol, veh/h		0			101			493			264	
Approach Delay, s/veh		0.0			11.1			7.5			4.6	
Approach LOS					B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.5	11.9		0.0	0.0	17.4		7.0				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.9	20.0		18.0	5.0	20.9		18.1				
Max Q Clear Time (g_c+I1), s	2.5	4.8		0.0	0.0	2.8		2.7				
Green Ext Time (p_c), s	0.0	2.6		0.0	0.0	1.3		0.3				

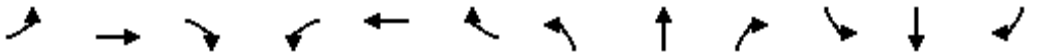
Intersection Summary		
HCM 6th Ctrl Delay		7.0
HCM 6th LOS		A

Notes

User approved volume balancing among the lanes for turning movement.

Appendix D: Synchro Reports – Near Term Plus Project

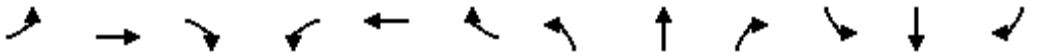
HCM 6th Edition methodology expects strict NEMA phasing.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	97	627	0	0	552	33	0	0	0	77	0	228
Future Volume (vph)	97	627	0	0	552	33	0	0	0	77	0	228
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	7.5			7.5	7.5				5.8	5.8	5.8
Lane Util. Factor	0.97	0.95			0.95	1.00				0.95	0.91	0.95
Frt	1.00	1.00			1.00	0.85				1.00	0.86	0.85
Flt Protected	0.95	1.00			1.00	1.00				0.95	1.00	1.00
Satd. Flow (prot)	3433	3539			3539	1583				1681	1452	1504
Flt Permitted	0.95	1.00			1.00	1.00				0.76	0.99	1.00
Satd. Flow (perm)	3433	3539			3539	1583				1340	1440	1504
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	105	682	0	0	600	36	0	0	0	84	0	248
RTOR Reduction (vph)	0	0	0	0	0	27	0	0	0	0	89	92
Lane Group Flow (vph)	105	682	0	0	600	9	0	0	0	76	41	34
Turn Type	Prot	NA		Prot	NA	Perm				Perm	NA	Perm
Protected Phases	5	2		1	6			3			4	
Permitted Phases						6	3			4		4
Actuated Green, G (s)	7.6	45.3			33.0	33.0				34.7	34.7	34.7
Effective Green, g (s)	7.6	45.3			33.0	33.0				34.7	34.7	34.7
Actuated g/C Ratio	0.06	0.35			0.25	0.25				0.27	0.27	0.27
Clearance Time (s)	4.7	7.5			7.5	7.5				5.8	5.8	5.8
Vehicle Extension (s)	3.0	3.0			3.0	3.0				3.0	3.0	3.0
Lane Grp Cap (vph)	201	1235			899	402				358	384	402
v/s Ratio Prot	0.03	c0.19			c0.17							
v/s Ratio Perm						0.01				c0.06	0.03	0.02
v/c Ratio	0.52	0.55			0.67	0.02				0.21	0.11	0.08
Uniform Delay, d1	59.3	34.1			43.5	36.3				36.9	35.9	35.6
Progression Factor	1.00	1.00			1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2	2.4	1.8			3.9	0.1				1.3	0.6	0.4
Delay (s)	61.8	35.9			47.4	36.4				38.3	36.4	36.0
Level of Service	E	D			D	D				D	D	D
Approach Delay (s)		39.3			46.8			0.0			36.7	
Approach LOS		D			D			A			D	

Intersection Summary			
HCM 2000 Control Delay	41.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	129.8	Sum of lost time (s)	23.1
Intersection Capacity Utilization	47.3%	ICU Level of Service	A
Analysis Period (min)	15		

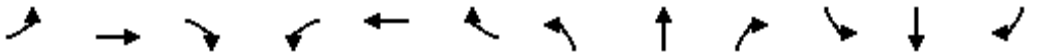
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	389	812	0	335	82	269	0	233	0	0	0
Future Volume (veh/h)	0	389	812	0	335	82	269	0	233	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	423	883	0	364	89	371	0	169			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	2357	1296	0	3387	1051	550	0	245			
Arrive On Green	0.00	0.66	0.66	0.00	0.66	0.66	0.15	0.00	0.15			
Sat Flow, veh/h	0	3647	1585	0	5274	1585	3563	0	1585			
Grp Volume(v), veh/h	0	423	883	0	364	89	371	0	169			
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1702	1585	1781	0	1585			
Q Serve(g_s), s	0.0	3.4	17.1	0.0	1.9	1.5	7.3	0.0	7.5			
Cycle Q Clear(g_c), s	0.0	3.4	17.1	0.0	1.9	1.5	7.3	0.0	7.5			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2357	1296	0	3387	1051	550	0	245			
V/C Ratio(X)	0.00	0.18	0.68	0.00	0.11	0.08	0.67	0.00	0.69			
Avail Cap(c_a), veh/h	0	2357	1296	0	3387	1051	2239	0	996			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	4.8	2.8	0.0	4.6	4.5	29.8	0.0	29.9			
Incr Delay (d2), s/veh	0.0	0.2	2.9	0.0	0.0	0.0	1.5	0.0	3.5			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	1.0	9.2	0.0	0.5	0.4	3.1	0.0	3.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	5.0	5.7	0.0	4.6	4.5	31.2	0.0	33.3			
LnGrp LOS	A	A	A	A	A	A	C	A	C			
Approach Vol, veh/h		1306			453			540				
Approach Delay, s/veh		5.5			4.6			31.9				
Approach LOS		A			A			C				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		57.0				57.0		17.6				
Change Period (Y+Rc), s		7.5				7.5		6.1				
Max Green Setting (Gmax), s		49.5				49.5		46.9				
Max Q Clear Time (g_c+I1), s		19.1				3.9		9.5				
Green Ext Time (p_c), s		8.2				3.0		2.0				
Intersection Summary												
HCM 6th Ctrl Delay			11.5									
HCM 6th LOS			B									

Notes

User approved volume balancing among the lanes for turning movement.



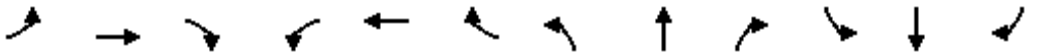
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↱		↑↑	↱				↰	✣	↱
Traffic Volume (veh/h)	0	964	596	0	497	139	0	0	0	103	2	1105
Future Volume (veh/h)	0	964	596	0	497	139	0	0	0	103	2	1105
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	1870	1870
Adj Flow Rate, veh/h	0	1048	648	0	540	151				75	0	1242
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	2433	755	0	1693	1331				648	0	1152
Arrive On Green	0.00	0.48	0.48	0.00	0.48	0.48				0.36	0.00	0.36
Sat Flow, veh/h	0	5274	1585	0	3647	1585				1781	0	3170
Grp Volume(v), veh/h	0	1048	648	0	540	151				75	0	1242
Grp Sat Flow(s),veh/h/ln	0	1702	1585	0	1777	1585				1781	0	1585
Q Serve(g_s), s	0.0	11.5	30.8	0.0	8.0	1.4				2.4	0.0	30.9
Cycle Q Clear(g_c), s	0.0	11.5	30.8	0.0	8.0	1.4				2.4	0.0	30.9
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2433	755	0	1693	1331				648	0	1152
V/C Ratio(X)	0.00	0.43	0.86	0.00	0.32	0.11				0.12	0.00	1.08
Avail Cap(c_a), veh/h	0	2433	755	0	1693	1331				648	0	1152
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	14.7	19.7	0.0	13.7	1.2				18.0	0.0	27.1
Incr Delay (d2), s/veh	0.0	0.1	9.7	0.0	0.5	0.2				0.4	0.0	50.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.2	12.4	0.0	3.1	1.6				1.0	0.0	19.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	14.8	29.4	0.0	14.2	1.4				18.3	0.0	77.1
LnGrp LOS	A	B	C	A	B	A				B	A	F
Approach Vol, veh/h		1696			691						1317	
Approach Delay, s/veh		20.4			11.4						73.8	
Approach LOS		C			B						E	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		48.0		37.0		48.0						
Change Period (Y+Rc), s		7.5		6.1		7.5						
Max Green Setting (Gmax), s		27.5		30.9		40.5						
Max Q Clear Time (g_c+I1), s		32.8		32.9		10.0						
Green Ext Time (p_c), s		0.0		0.0		4.5						

Intersection Summary												
HCM 6th Ctrl Delay			37.7									
HCM 6th LOS			D									

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	96	1025	148	98	1046	146	185	135	125	490	146	81
Future Volume (veh/h)	96	1025	148	98	1046	146	185	135	125	490	146	81
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	104	1114	161	107	1137	159	201	147	136	533	159	88
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	211	1997	620	212	1391	900	193	213	369	610	206	114
Arrive On Green	0.12	0.39	0.39	0.12	0.39	0.39	0.11	0.11	0.11	0.18	0.18	0.18
Sat Flow, veh/h	1781	5106	1585	1781	3554	1585	1781	1870	1585	3456	1131	626
Grp Volume(v), veh/h	104	1114	161	107	1137	159	201	147	136	533	0	247
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1777	1585	1781	1870	1585	1728	0	1758
Q Serve(g_s), s	7.2	22.4	9.1	7.4	37.8	6.4	14.3	10.0	9.5	19.8	0.0	17.7
Cycle Q Clear(g_c), s	7.2	22.4	9.1	7.4	37.8	6.4	14.3	10.0	9.5	19.8	0.0	17.7
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.36
Lane Grp Cap(c), veh/h	211	1997	620	212	1391	900	193	213	369	610	0	319
V/C Ratio(X)	0.49	0.56	0.26	0.51	0.82	0.18	1.04	0.69	0.37	0.87	0.00	0.77
Avail Cap(c_a), veh/h	216	1997	620	252	1462	932	193	665	752	822	0	852
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	54.4	31.3	27.2	54.5	36.0	13.7	58.8	56.3	42.5	52.9	0.0	51.4
Incr Delay (d2), s/veh	1.8	1.1	1.0	1.9	3.6	0.1	76.1	4.0	0.6	8.1	0.0	4.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	9.4	3.7	3.5	16.9	0.0	10.5	5.0	3.8	9.3	0.0	8.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	56.2	32.4	28.3	56.4	39.6	13.8	134.9	60.2	43.1	61.0	0.0	55.4
LnGrp LOS	E	C	C	E	D	B	F	E	D	E	A	E
Approach Vol, veh/h		1379			1403			484			780	
Approach Delay, s/veh		33.7			37.9			86.4			59.2	
Approach LOS		C			D			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.4	59.1	20.0	31.5	21.3	59.1	29.0	22.5
Change Period (Y+Rc), s	* 5.7	7.5	* 5.7	7.5	* 5.7	7.5	* 5.7	7.5
Max Green Setting (Gmax), s	* 19	51.6	* 14	64.0	* 16	54.3	* 31	46.9
Max Q Clear Time (g_c+I1), s	9.4	24.4	16.3	19.7	9.2	39.8	21.8	12.0
Green Ext Time (p_c), s	0.2	10.0	0.0	1.7	0.1	7.6	1.5	1.3

Intersection Summary	
HCM 6th Ctrl Delay	46.4
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

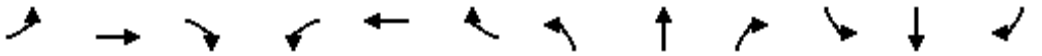
Intersection	
Int Delay, s/veh	6.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	65	93	8	3	15
Future Vol, veh/h	6	65	93	8	3	15
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	-	-	-	-	-
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	7	71	101	9	3	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	222	11	19	0	-	0
Stage 1	11	-	-	-	-	-
Stage 2	211	-	-	-	-	-
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	766	1070	1597	-	-	-
Stage 1	1012	-	-	-	-	-
Stage 2	824	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	717	1070	1597	-	-	-
Mov Cap-2 Maneuver	717	-	-	-	-	-
Stage 1	947	-	-	-	-	-
Stage 2	824	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.8	6.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1597	-	1027	-	-
HCM Lane V/C Ratio	0.063	-	0.075	-	-
HCM Control Delay (s)	7.4	0	8.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	-	-



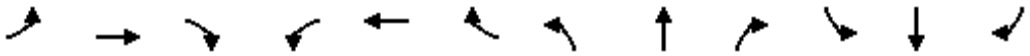
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	0	4	184	20	77	55	181	102	48	221	42
Future Volume (veh/h)	12	0	4	184	20	77	55	181	102	48	221	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	13	0	4	153	88	84	60	197	111	52	240	46
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	39	0	35	314	155	148	113	407	345	102	395	335
Arrive On Green	0.02	0.00	0.02	0.18	0.18	0.18	0.06	0.22	0.22	0.06	0.21	0.21
Sat Flow, veh/h	1781	0	1585	1781	880	840	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	13	0	4	153	0	172	60	197	111	52	240	46
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	0	1719	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	0.2	0.0	0.1	2.6	0.0	3.1	1.1	3.1	2.0	1.0	4.0	0.8
Cycle Q Clear(g_c), s	0.2	0.0	0.1	2.6	0.0	3.1	1.1	3.1	2.0	1.0	4.0	0.8
Prop In Lane	1.00		1.00	1.00		0.49	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	39	0	35	314	0	303	113	407	345	102	395	335
V/C Ratio(X)	0.33	0.00	0.12	0.49	0.00	0.57	0.53	0.48	0.32	0.51	0.61	0.14
Avail Cap(c_a), veh/h	939	0	835	965	0	931	287	1041	882	339	1095	928
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	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	16.5	0.0	16.4	12.7	0.0	12.9	15.5	11.7	11.2	15.6	12.2	10.9
Incr Delay (d2), s/veh	5.0	0.0	1.5	1.2	0.0	1.7	3.8	0.9	0.5	3.9	1.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.0	0.9	0.0	1.1	0.5	1.1	0.6	0.4	1.4	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	21.4	0.0	17.8	13.8	0.0	14.5	19.3	12.6	11.8	19.6	13.7	11.1
LnGrp LOS	C	A	B	B	A	B	B	B	B	B	B	B
Approach Vol, veh/h		17			325			368			338	
Approach Delay, s/veh		20.6			14.2			13.4			14.3	
Approach LOS		C			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.4	11.9		5.2	6.7	11.7		10.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	6.5	19.0		18.0	5.5	20.0		18.5				
Max Q Clear Time (g_c+I1), s	3.0	5.1		2.2	3.1	6.0		5.1				
Green Ext Time (p_c), s	0.0	1.2		0.0	0.0	1.2		1.2				

Intersection Summary			
HCM 6th Ctrl Delay		14.1	
HCM 6th LOS		B	

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	12	39	173	28	19	120	293	89	12	357	50
Future Volume (veh/h)	7	12	39	173	28	19	120	293	89	12	357	50
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	8	13	42	120	126	21	130	318	97	13	388	54
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	114	25	80	255	224	37	175	817	245	30	696	96
Arrive On Green	0.06	0.06	0.06	0.14	0.14	0.14	0.10	0.30	0.30	0.02	0.22	0.22
Sat Flow, veh/h	1781	389	1256	1781	1563	260	1781	2694	808	1781	3136	433
Grp Volume(v), veh/h	8	0	55	120	0	147	130	208	207	13	219	223
Grp Sat Flow(s),veh/h/ln	1781	0	1644	1781	0	1823	1781	1777	1725	1781	1777	1792
Q Serve(g_s), s	0.2	0.0	1.2	2.4	0.0	2.9	2.7	3.5	3.6	0.3	4.2	4.2
Cycle Q Clear(g_c), s	0.2	0.0	1.2	2.4	0.0	2.9	2.7	3.5	3.6	0.3	4.2	4.2
Prop In Lane	1.00		0.76	1.00		0.14	1.00		0.47	1.00		0.24
Lane Grp Cap(c), veh/h	114	0	105	255	0	261	175	539	523	30	395	398
V/C Ratio(X)	0.07	0.00	0.52	0.47	0.00	0.56	0.74	0.39	0.40	0.43	0.55	0.56
Avail Cap(c_a), veh/h	842	0	777	866	0	886	234	933	906	257	957	965
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	16.8	0.0	17.3	15.0	0.0	15.2	16.7	10.5	10.5	18.5	13.1	13.2
Incr Delay (d2), s/veh	0.3	0.0	4.0	1.3	0.0	1.9	8.5	0.5	0.5	9.5	1.2	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(50%),veh/ln	0.1	0.0	0.5	0.9	0.0	1.1	1.3	1.1	1.1	0.2	1.5	1.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.0	0.0	21.3	16.3	0.0	17.1	25.2	10.9	11.0	28.0	14.4	14.4
LnGrp LOS	B	A	C	B	A	B	C	B	B	C	B	B
Approach Vol, veh/h		63			267			545			455	
Approach Delay, s/veh		20.7			16.8			14.3			14.8	
Approach LOS		C			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.1	16.0		6.9	8.2	13.0		9.9				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	20.0		18.0	5.0	20.5		18.5				
Max Q Clear Time (g_c+I1), s	2.3	5.6		3.2	4.7	6.2		4.9				
Green Ext Time (p_c), s	0.0	2.1		0.2	0.0	2.2		0.9				

Intersection Summary			
HCM 6th Ctrl Delay		15.3	
HCM 6th LOS		B	

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	85	0	27	0	170	49	27	367	0
Future Volume (veh/h)	0	0	0	85	0	27	0	170	49	27	367	0
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	60	44	29	0	185	53	29	399	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	8	8	0	225	133	88	8	621	173	66	1658	0
Arrive On Green	0.00	0.00	0.00	0.13	0.13	0.13	0.00	0.23	0.23	0.04	0.47	0.00
Sat Flow, veh/h	1781	1870	0	1781	1052	693	1781	2745	765	1781	3647	0
Grp Volume(v), veh/h	0	0	0	60	0	73	0	118	120	29	399	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	0	1746	1781	1777	1733	1781	1777	0
Q Serve(g_s), s	0.0	0.0	0.0	0.7	0.0	0.8	0.0	1.2	1.3	0.4	1.5	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.7	0.0	0.8	0.0	1.2	1.3	0.4	1.5	0.0
Prop In Lane	1.00		0.00	1.00		0.40	1.00		0.44	1.00		0.00
Lane Grp Cap(c), veh/h	8	8	0	225	0	220	8	402	392	66	1658	0
V/C Ratio(X)	0.00	0.00	0.00	0.27	0.00	0.33	0.00	0.29	0.31	0.44	0.24	0.00
Avail Cap(c_a), veh/h	1450	1523	0	1491	0	1461	403	1591	1552	459	3295	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	8.7	0.0	8.8	0.0	7.1	7.1	10.4	3.5	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.6	0.0	0.9	0.0	0.4	0.4	4.6	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.2	0.0	0.2	0.0	0.3	0.3	0.2	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	9.4	0.0	9.7	0.0	7.5	7.5	15.0	3.6	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	B	A	A
Approach Vol, veh/h		0			133			238			428	
Approach Delay, s/veh		0.0			9.5			7.5			4.4	
Approach LOS					A			A			A	

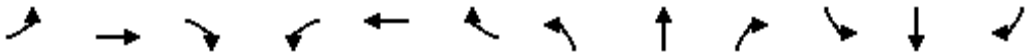
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.3	9.5		0.0	0.0	14.8		7.3				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.7	19.8		18.0	5.0	20.5		18.5				
Max Q Clear Time (g_c+I1), s	2.4	3.3		0.0	0.0	3.5		2.8				
Green Ext Time (p_c), s	0.0	1.2		0.0	0.0	2.4		0.4				

Intersection Summary												
HCM 6th Ctrl Delay			6.2									
HCM 6th LOS			A									

Notes

User approved volume balancing among the lanes for turning movement.

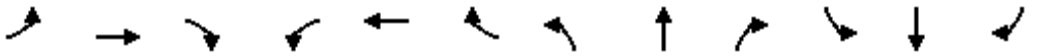
HCM 6th Edition methodology expects strict NEMA phasing.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	265	673	0	0	731	87	0	0	0	48	0	137
Future Volume (vph)	265	673	0	0	731	87	0	0	0	48	0	137
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	7.5			7.5	7.5					5.8	
Lane Util. Factor	0.97	0.95			0.95	1.00					1.00	
Frt	1.00	1.00			1.00	0.85					0.90	
Flt Protected	0.95	1.00			1.00	1.00					0.99	
Satd. Flow (prot)	3433	3539			3539	1583					1655	
Flt Permitted	0.95	1.00			1.00	1.00					0.92	
Satd. Flow (perm)	3433	3539			3539	1583					1542	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	288	732	0	0	795	95	0	0	0	52	0	149
RTOR Reduction (vph)	0	0	0	0	0	69	0	0	0	0	83	0
Lane Group Flow (vph)	288	732	0	0	795	26	0	0	0	0	118	0
Turn Type	Prot	NA		Prot	NA	Perm	Perm		Perm	Perm	NA	
Protected Phases	5	2		1	6			3			4	
Permitted Phases						6	3		3	4		
Actuated Green, G (s)	12.3	55.5			38.5	38.5					34.7	
Effective Green, g (s)	12.3	55.5			38.5	38.5					34.7	
Actuated g/C Ratio	0.09	0.40			0.28	0.28					0.25	
Clearance Time (s)	4.7	7.5			7.5	7.5					5.8	
Vehicle Extension (s)	3.0	3.0			3.0	3.0					3.0	
Lane Grp Cap (vph)	301	1402			973	435					382	
v/s Ratio Prot	c0.08	0.21			c0.22							
v/s Ratio Perm						0.02					c0.08	
v/c Ratio	0.96	0.52			0.82	0.06					0.31	
Uniform Delay, d1	63.6	32.2			47.5	37.4					42.9	
Progression Factor	1.00	1.00			1.00	1.00					1.00	
Incremental Delay, d2	39.9	1.4			7.6	0.3					2.1	
Delay (s)	103.5	33.6			55.0	37.7					44.9	
Level of Service	F	C			E	D					D	
Approach Delay (s)		53.3			53.2			0.0			44.9	
Approach LOS		D			D			A			D	

Intersection Summary			
HCM 2000 Control Delay	52.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	23.1
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



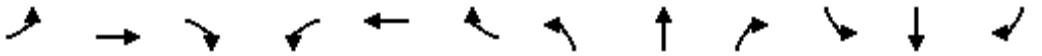
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	427	1191	0	704	100	762	8	243	0	0	0
Future Volume (veh/h)	0	427	1191	0	704	100	762	8	243	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	464	1295	0	765	109	914	0	179			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	1902	1342	0	2733	848	1110	0	494			
Arrive On Green	0.00	0.54	0.54	0.00	0.54	0.54	0.31	0.00	0.31			
Sat Flow, veh/h	0	3647	1585	0	5274	1585	3563	0	1585			
Grp Volume(v), veh/h	0	464	1295	0	765	109	914	0	179			
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1702	1585	1781	0	1585			
Q Serve(g_s), s	0.0	6.2	47.5	0.0	7.3	3.0	21.1	0.0	7.8			
Cycle Q Clear(g_c), s	0.0	6.2	47.5	0.0	7.3	3.0	21.1	0.0	7.8			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1902	1342	0	2733	848	1110	0	494			
V/C Ratio(X)	0.00	0.24	0.96	0.00	0.28	0.13	0.82	0.00	0.36			
Avail Cap(c_a), veh/h	0	1902	1342	0	2733	848	1963	0	873			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	11.0	4.7	0.0	11.3	10.3	28.3	0.0	23.7			
Incr Delay (d2), s/veh	0.0	0.3	17.5	0.0	0.1	0.1	1.6	0.0	0.4			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	2.4	34.7	0.0	2.6	1.0	8.9	0.0	2.9			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	11.3	22.2	0.0	11.3	10.4	29.9	0.0	24.2			
LnGrp LOS	A	B	C	A	B	B	C	A	C			
Approach Vol, veh/h		1759			874			1093				
Approach Delay, s/veh		19.3			11.2			29.0				
Approach LOS		B			B			C				

Timer - Assigned Phs	2					6		8				
Phs Duration (G+Y+Rc), s	55.0					55.0		33.7				
Change Period (Y+Rc), s	7.5					7.5		6.1				
Max Green Setting (Gmax), s	47.5					47.5		48.9				
Max Q Clear Time (g_c+I1), s	49.5					9.3		23.1				
Green Ext Time (p_c), s	0.0					6.7		4.6				

Intersection Summary												
HCM 6th Ctrl Delay			20.2									
HCM 6th LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↱		↑↑	↱				↰	✣	↱
Traffic Volume (veh/h)	0	1438	548	0	1115	251	0	0	0	142	10	868
Future Volume (veh/h)	0	1438	548	0	1115	251	0	0	0	142	10	868
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	1870	1870
Adj Flow Rate, veh/h	0	1563	596	0	1212	273				106	0	1001
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	2853	886	0	1986	1268				430	0	765
Arrive On Green	0.00	0.56	0.56	0.00	0.56	0.56				0.24	0.00	0.24
Sat Flow, veh/h	0	5274	1585	0	3647	1585				1781	0	3170
Grp Volume(v), veh/h	0	1563	596	0	1212	273				106	0	1001
Grp Sat Flow(s),veh/h/ln	0	1702	1585	0	1777	1585				1781	0	1585
Q Serve(g_s), s	0.0	13.2	18.1	0.0	15.5	2.8				3.3	0.0	16.4
Cycle Q Clear(g_c), s	0.0	13.2	18.1	0.0	15.5	2.8				3.3	0.0	16.4
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2853	886	0	1986	1268				430	0	765
V/C Ratio(X)	0.00	0.55	0.67	0.00	0.61	0.22				0.25	0.00	1.31
Avail Cap(c_a), veh/h	0	2853	886	0	1986	1268				430	0	765
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	9.5	10.6	0.0	10.0	1.6				20.8	0.0	25.8
Incr Delay (d2), s/veh	0.0	0.2	2.0	0.0	1.4	0.4				1.4	0.0	148.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.1	5.7	0.0	5.4	1.9				1.5	0.0	21.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	9.8	12.6	0.0	11.5	2.0				22.2	0.0	174.3
LnGrp LOS	A	A	B	A	B	A				C	A	F
Approach Vol, veh/h		2159			1485						1107	
Approach Delay, s/veh		10.5			9.7						159.7	
Approach LOS		B			A						F	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		45.5		22.5		45.5						
Change Period (Y+Rc), s		7.5		6.1		7.5						
Max Green Setting (Gmax), s		29.5		16.4		38.0						
Max Q Clear Time (g_c+I1), s		20.1		18.4		17.5						
Green Ext Time (p_c), s		7.6		0.0		10.3						

Intersection Summary												
HCM 6th Ctrl Delay			45.1									
HCM 6th LOS			D									

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	137	1500	144	115	1152	454	140	190	115	348	133	106
Future Volume (veh/h)	137	1500	144	115	1152	454	140	190	115	348	133	106
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	149	1630	157	125	1252	493	152	207	125	378	145	115
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	212	2142	665	210	1489	869	163	255	403	448	168	133
Arrive On Green	0.12	0.42	0.42	0.12	0.42	0.42	0.09	0.14	0.14	0.13	0.17	0.17
Sat Flow, veh/h	1781	5106	1585	1781	3554	1585	1781	1870	1585	3456	966	766
Grp Volume(v), veh/h	149	1630	157	125	1252	493	152	207	125	378	0	260
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1777	1585	1781	1870	1585	1728	0	1732
Q Serve(g_s), s	10.8	36.5	8.6	8.9	42.4	27.4	11.4	14.4	8.6	14.3	0.0	19.6
Cycle Q Clear(g_c), s	10.8	36.5	8.6	8.9	42.4	27.4	11.4	14.4	8.6	14.3	0.0	19.6
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.44
Lane Grp Cap(c), veh/h	212	2142	665	210	1489	869	163	255	403	448	0	301
V/C Ratio(X)	0.70	0.76	0.24	0.59	0.84	0.57	0.93	0.81	0.31	0.84	0.00	0.86
Avail Cap(c_a), veh/h	212	2142	665	212	1491	870	163	683	766	703	0	826
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	56.9	33.2	25.1	56.1	35.0	19.9	60.5	56.3	40.5	57.1	0.0	53.9
Incr Delay (d2), s/veh	10.0	2.6	0.8	4.3	4.5	0.9	50.5	6.2	0.4	5.6	0.0	7.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	15.5	3.4	4.3	19.1	10.2	7.4	7.3	3.4	6.6	0.0	9.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	66.9	35.8	25.9	60.5	39.5	20.7	111.0	62.5	41.0	62.6	0.0	61.1
LnGrp LOS	E	D	C	E	D	C	F	E	D	E	A	E
Approach Vol, veh/h		1936			1870			484			638	
Approach Delay, s/veh		37.4			35.9			72.2			62.0	
Approach LOS		D			D			E			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.5	63.8	18.0	30.8	21.6	63.7	23.1	25.8
Change Period (Y+Rc), s	* 5.7	7.5	* 5.7	7.5	* 5.7	7.5	* 5.7	7.5
Max Green Setting (Gmax), s	* 16	56.3	* 12	64.0	* 16	56.3	* 27	49.0
Max Q Clear Time (g_c+I1), s	10.9	38.5	13.4	21.6	12.8	44.4	16.3	16.4
Green Ext Time (p_c), s	0.1	11.7	0.0	1.8	0.1	8.0	1.0	1.7

Intersection Summary	
HCM 6th Ctrl Delay	43.5
HCM 6th LOS	D

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	9.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	390	307	25	19	17
Future Vol, veh/h	13	390	307	25	19	17
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	-	-	-	-	-
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	14	424	334	27	21	18

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	725	30	39	0	-	0
Stage 1	30	-	-	-	-	-
Stage 2	695	-	-	-	-	-
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	392	1044	1571	-	-	-
Stage 1	993	-	-	-	-	-
Stage 2	495	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	307	1044	1571	-	-	-
Mov Cap-2 Maneuver	307	-	-	-	-	-
Stage 1	779	-	-	-	-	-
Stage 2	495	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.7	7.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1571	-	969	-	-
HCM Lane V/C Ratio	0.212	-	0.452	-	-
HCM Control Delay (s)	7.9	0	11.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.8	-	2.4	-	-

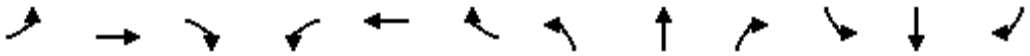
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	0	14	135	12	41	53	274	198	74	311	43
Future Volume (veh/h)	24	0	14	135	12	41	53	274	198	74	311	43
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	26	0	15	102	75	45	58	298	215	80	338	47
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	83	0	74	223	137	82	109	477	404	136	505	428
Arrive On Green	0.05	0.00	0.05	0.13	0.13	0.13	0.06	0.25	0.25	0.08	0.27	0.27
Sat Flow, veh/h	1781	0	1585	1781	1095	657	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	26	0	15	102	0	120	58	298	215	80	338	47
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	0	1752	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	0.5	0.0	0.3	1.9	0.0	2.3	1.1	5.1	4.2	1.6	5.8	0.8
Cycle Q Clear(g_c), s	0.5	0.0	0.3	1.9	0.0	2.3	1.1	5.1	4.2	1.6	5.8	0.8
Prop In Lane	1.00		1.00	1.00		0.38	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	83	0	74	223	0	219	109	477	404	136	505	428
V/C Ratio(X)	0.31	0.00	0.20	0.46	0.00	0.55	0.53	0.63	0.53	0.59	0.67	0.11
Avail Cap(c_a), veh/h	885	0	788	885	0	871	270	1058	897	270	1058	897
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	16.7	0.0	16.6	14.7	0.0	14.9	16.5	12.0	11.6	16.2	11.8	9.9
Incr Delay (d2), s/veh	2.1	0.0	1.3	1.5	0.0	2.1	4.0	1.3	1.1	4.0	1.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.1	0.7	0.0	0.9	0.5	1.8	1.3	0.7	2.1	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.8	0.0	18.0	16.2	0.0	17.0	20.5	13.3	12.7	20.2	13.3	10.1
LnGrp LOS	B	A	B	B	A	B	C	B	B	C	B	B
Approach Vol, veh/h		41			222			571			465	
Approach Delay, s/veh		18.5			16.6			13.8			14.2	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.3	13.7		6.2	6.7	14.3		9.0				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	20.5		18.0	5.5	20.5		18.0				
Max Q Clear Time (g_c+I1), s	3.6	7.1		2.5	3.1	7.8		4.3				
Green Ext Time (p_c), s	0.0	2.1		0.1	0.0	1.7		0.8				

Intersection Summary			
HCM 6th Ctrl Delay		14.6	
HCM 6th LOS		B	

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	15	58	111	12	14	127	512	162	22	395	51
Future Volume (veh/h)	6	15	58	111	12	14	127	512	162	22	395	51
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	7	16	63	144	0	0	138	557	176	24	429	55
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	139	26	102	362	190	0	178	868	273	52	811	103
Arrive On Green	0.08	0.08	0.08	0.10	0.00	0.00	0.10	0.33	0.33	0.03	0.26	0.26
Sat Flow, veh/h	1781	331	1304	3563	1870	0	1781	2659	837	1781	3170	404
Grp Volume(v), veh/h	7	0	79	144	0	0	138	372	361	24	239	245
Grp Sat Flow(s),veh/h/ln	1781	0	1636	1781	1870	0	1781	1777	1720	1781	1777	1798
Q Serve(g_s), s	0.1	0.0	1.8	1.5	0.0	0.0	2.9	6.9	6.9	0.5	4.5	4.5
Cycle Q Clear(g_c), s	0.1	0.0	1.8	1.5	0.0	0.0	2.9	6.9	6.9	0.5	4.5	4.5
Prop In Lane	1.00		0.80	1.00		0.00	1.00		0.49	1.00		0.22
Lane Grp Cap(c), veh/h	139	0	127	362	190	0	178	580	561	52	455	460
V/C Ratio(X)	0.05	0.00	0.62	0.40	0.00	0.00	0.78	0.64	0.64	0.46	0.53	0.53
Avail Cap(c_a), veh/h	828	0	760	1655	869	0	345	959	928	235	849	858
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	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.5	0.0	17.3	16.3	0.0	0.0	17.0	11.1	11.1	18.5	12.4	12.4
Incr Delay (d2), s/veh	0.1	0.0	4.8	0.7	0.0	0.0	7.0	1.2	1.2	6.1	0.9	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.8	0.5	0.0	0.0	1.4	2.2	2.2	0.3	1.5	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	16.7	0.0	22.1	17.0	0.0	0.0	24.0	12.3	12.4	24.6	13.3	13.4
LnGrp LOS	B	A	C	B	A	A	C	B	B	C	B	B
Approach Vol, veh/h		86			144			871			508	
Approach Delay, s/veh		21.7			17.0			14.2			13.9	
Approach LOS		C			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.6	17.1		7.5	8.4	14.4		8.4				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.1	20.9		18.0	7.5	18.5		18.0				
Max Q Clear Time (g_c+I1), s	2.5	8.9		3.8	4.9	6.5		3.5				
Green Ext Time (p_c), s	0.0	3.7		0.3	0.1	2.3		0.4				

Intersection Summary			
HCM 6th Ctrl Delay		14.7	
HCM 6th LOS		B	

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	55	0	34	0	452	79	31	245	0
Future Volume (veh/h)	0	0	0	55	0	34	0	452	79	31	245	0
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	48	16	37	0	491	86	34	266	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	7	7	0	178	50	116	7	998	174	75	1947	0
Arrive On Green	0.00	0.00	0.00	0.10	0.10	0.10	0.00	0.33	0.33	0.04	0.55	0.00
Sat Flow, veh/h	1781	1870	0	1781	502	1160	1781	3025	527	1781	3647	0
Grp Volume(v), veh/h	0	0	0	48	0	53	0	287	290	34	266	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	0	1662	1781	1777	1775	1781	1777	0
Q Serve(g_s), s	0.0	0.0	0.0	0.6	0.0	0.8	0.0	3.3	3.3	0.5	0.9	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.6	0.0	0.8	0.0	3.3	3.3	0.5	0.9	0.0
Prop In Lane	1.00		0.00	1.00		0.70	1.00		0.30	1.00		0.00
Lane Grp Cap(c), veh/h	7	7	0	178	0	166	7	586	586	75	1947	0
V/C Ratio(X)	0.00	0.00	0.00	0.27	0.00	0.32	0.00	0.49	0.49	0.45	0.14	0.00
Avail Cap(c_a), veh/h	1254	1317	0	1261	0	1177	348	1390	1389	411	2906	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	10.6	0.0	10.7	0.0	6.8	6.9	12.0	2.8	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.8	0.0	1.1	0.0	0.6	0.6	4.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.2	0.0	0.2	0.0	0.8	0.8	0.2	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	11.4	0.0	11.8	0.0	7.5	7.5	16.2	2.9	0.0
LnGrp LOS	A	A	A	B	A	B	A	A	A	B	A	A
Approach Vol, veh/h		0			101			577			300	
Approach Delay, s/veh		0.0			11.6			7.5			4.4	
Approach LOS					B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.6	12.9		0.0	0.0	18.5		7.1				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.9	20.0		18.0	5.0	20.9		18.1				
Max Q Clear Time (g_c+I1), s	2.5	5.3		0.0	0.0	2.9		2.8				
Green Ext Time (p_c), s	0.0	3.1		0.0	0.0	1.5		0.3				

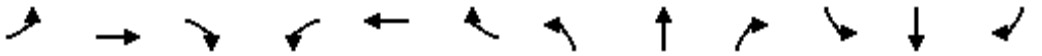
Intersection Summary		
HCM 6th Ctrl Delay		7.0
HCM 6th LOS		A

Notes

User approved volume balancing among the lanes for turning movement.

Appendix E: Synchro Reports – Year 2035

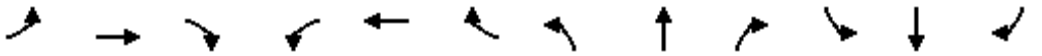
HCM 6th Edition methodology expects strict NEMA phasing.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	767	0	0	676	39	0	0	0	89	0	208
Future Volume (vph)	88	767	0	0	676	39	0	0	0	89	0	208
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	7.5			7.5	7.5				5.8	5.8	5.8
Lane Util. Factor	0.97	0.95			0.95	1.00				0.95	0.91	0.95
Frt	1.00	1.00			1.00	0.85				1.00	0.86	0.85
Flt Protected	0.95	1.00			1.00	1.00				0.95	1.00	1.00
Satd. Flow (prot)	3433	3539			3539	1583				1681	1456	1504
Flt Permitted	0.95	1.00			1.00	1.00				0.76	0.98	1.00
Satd. Flow (perm)	3433	3539			3539	1583				1340	1438	1504
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	96	834	0	0	735	42	0	0	0	97	0	226
RTOR Reduction (vph)	0	0	0	0	0	31	0	0	0	0	86	86
Lane Group Flow (vph)	96	834	0	0	735	11	0	0	0	87	32	32
Turn Type	Prot	NA		Prot	NA	Perm				Perm	NA	Perm
Protected Phases	5	2		1	6			3			4	
Permitted Phases						6	3			4		4
Actuated Green, G (s)	7.6	45.3			33.0	33.0				34.7	34.7	34.7
Effective Green, g (s)	7.6	45.3			33.0	33.0				34.7	34.7	34.7
Actuated g/C Ratio	0.06	0.35			0.25	0.25				0.27	0.27	0.27
Clearance Time (s)	4.7	7.5			7.5	7.5				5.8	5.8	5.8
Vehicle Extension (s)	3.0	3.0			3.0	3.0				3.0	3.0	3.0
Lane Grp Cap (vph)	201	1235			899	402				358	384	402
v/s Ratio Prot	0.03	c0.24			c0.21							
v/s Ratio Perm						0.01				c0.06	0.02	0.02
v/c Ratio	0.48	0.68			0.82	0.03				0.24	0.08	0.08
Uniform Delay, d1	59.2	36.0			45.6	36.3				37.3	35.6	35.6
Progression Factor	1.00	1.00			1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2	1.8	3.0			8.2	0.1				1.6	0.4	0.4
Delay (s)	61.0	39.0			53.7	36.5				38.9	36.0	36.0
Level of Service	E	D			D	D				D	D	D
Approach Delay (s)		41.2			52.8			0.0			36.8	
Approach LOS		D			D			A			D	

Intersection Summary			
HCM 2000 Control Delay	44.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	129.8	Sum of lost time (s)	23.1
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

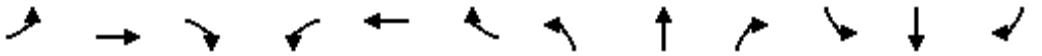


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	389	812	0	335	82	269	0	233	0	0	0
Future Volume (veh/h)	0	389	812	0	335	82	269	0	233	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	423	883	0	364	89	371	0	169			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	2357	1296	0	3387	1051	550	0	245			
Arrive On Green	0.00	0.66	0.66	0.00	0.66	0.66	0.15	0.00	0.15			
Sat Flow, veh/h	0	3647	1585	0	5274	1585	3563	0	1585			
Grp Volume(v), veh/h	0	423	883	0	364	89	371	0	169			
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1702	1585	1781	0	1585			
Q Serve(g_s), s	0.0	3.4	17.1	0.0	1.9	1.5	7.3	0.0	7.5			
Cycle Q Clear(g_c), s	0.0	3.4	17.1	0.0	1.9	1.5	7.3	0.0	7.5			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2357	1296	0	3387	1051	550	0	245			
V/C Ratio(X)	0.00	0.18	0.68	0.00	0.11	0.08	0.67	0.00	0.69			
Avail Cap(c_a), veh/h	0	2357	1296	0	3387	1051	2239	0	996			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	4.8	2.8	0.0	4.6	4.5	29.8	0.0	29.9			
Incr Delay (d2), s/veh	0.0	0.2	2.9	0.0	0.0	0.0	1.5	0.0	3.5			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	1.0	9.2	0.0	0.5	0.4	3.1	0.0	3.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	5.0	5.7	0.0	4.6	4.5	31.2	0.0	33.3			
LnGrp LOS	A	A	A	A	A	A	C	A	C			
Approach Vol, veh/h		1306			453			540				
Approach Delay, s/veh		5.5			4.6			31.9				
Approach LOS		A			A			C				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		57.0				57.0		17.6				
Change Period (Y+Rc), s		7.5				7.5		6.1				
Max Green Setting (Gmax), s		49.5				49.5		46.9				
Max Q Clear Time (g_c+I1), s		19.1				3.9		9.5				
Green Ext Time (p_c), s		8.2				3.0		2.0				

Intersection Summary	
HCM 6th Ctrl Delay	11.5
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.



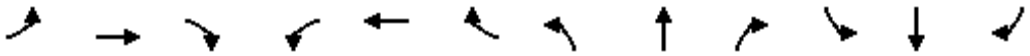
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↱		↑↑	↱				↰	✣	↱
Traffic Volume (veh/h)	0	1169	726	0	592	132	0	0	0	117	2	1347
Future Volume (veh/h)	0	1169	726	0	592	132	0	0	0	117	2	1347
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	1870	1870
Adj Flow Rate, veh/h	0	1271	789	0	643	143				85	0	966
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	2087	648	0	1452	1378				820	0	1460
Arrive On Green	0.00	0.41	0.41	0.00	0.41	0.41				0.46	0.00	0.46
Sat Flow, veh/h	0	5274	1585	0	3647	1585				1781	0	3170
Grp Volume(v), veh/h	0	1271	789	0	643	143				85	0	966
Grp Sat Flow(s),veh/h/ln	0	1702	1585	0	1777	1585				1781	0	1585
Q Serve(g_s), s	0.0	20.4	42.5	0.0	13.6	1.3				2.8	0.0	24.6
Cycle Q Clear(g_c), s	0.0	20.4	42.5	0.0	13.6	1.3				2.8	0.0	24.6
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2087	648	0	1452	1378				820	0	1460
V/C Ratio(X)	0.00	0.61	1.22	0.00	0.44	0.10				0.10	0.00	0.66
Avail Cap(c_a), veh/h	0	2087	648	0	1452	1378				820	0	1460
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	24.2	30.7	0.0	22.2	1.0				15.9	0.0	21.8
Incr Delay (d2), s/veh	0.0	0.5	111.8	0.0	1.0	0.2				0.3	0.0	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	8.1	35.7	0.0	5.8	2.3				1.2	0.0	9.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	24.7	142.5	0.0	23.2	1.1				16.1	0.0	24.1
LnGrp LOS	A	C	F	A	C	A				B	A	C
Approach Vol, veh/h		2060			786						1051	
Approach Delay, s/veh		69.8			19.2						23.5	
Approach LOS		E			B						C	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		50.0		54.0		50.0						
Change Period (Y+Rc), s		7.5		6.1		7.5						
Max Green Setting (Gmax), s		42.5		47.9		38.5						
Max Q Clear Time (g_c+I1), s		44.5		26.6		15.6						
Green Ext Time (p_c), s		0.0		4.8		5.1						

Intersection Summary												
HCM 6th Ctrl Delay			47.1									
HCM 6th LOS			D									

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	118	1255	181	120	1280	179	226	165	153	600	179	99
Future Volume (veh/h)	118	1255	181	120	1280	179	226	165	153	600	179	99
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	128	1364	110	130	1391	97	246	179	79	652	195	59
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	205	2044	634	205	1423	913	172	220	369	608	272	82
Arrive On Green	0.11	0.40	0.40	0.12	0.40	0.40	0.10	0.12	0.12	0.18	0.20	0.20
Sat Flow, veh/h	1781	5106	1585	1781	3554	1585	1781	1870	1585	3456	1378	417
Grp Volume(v), veh/h	128	1364	110	130	1391	97	246	179	79	652	0	254
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1777	1585	1781	1870	1585	1728	0	1795
Q Serve(g_s), s	9.5	30.2	6.2	9.6	53.3	3.8	13.3	12.9	5.6	24.3	0.0	18.3
Cycle Q Clear(g_c), s	9.5	30.2	6.2	9.6	53.3	3.8	13.3	12.9	5.6	24.3	0.0	18.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.23
Lane Grp Cap(c), veh/h	205	2044	634	205	1423	913	172	220	369	608	0	354
V/C Ratio(X)	0.62	0.67	0.17	0.63	0.98	0.11	1.43	0.81	0.21	1.07	0.00	0.72
Avail Cap(c_a), veh/h	206	2044	634	210	1423	913	172	718	791	608	0	832
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	58.3	33.9	26.7	58.3	40.8	13.2	62.4	59.5	42.8	56.9	0.0	51.8
Incr Delay (d2), s/veh	5.7	1.7	0.6	5.9	18.7	0.1	225.4	7.1	0.3	57.5	0.0	2.7
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	4.6	12.8	2.5	4.7	26.7	1.4	16.8	6.6	2.2	15.4	0.0	8.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	64.0	35.6	27.3	64.2	59.5	13.3	287.8	66.6	43.1	114.4	0.0	54.6
LnGrp LOS	E	D	C	E	E	B	F	E	D	F	A	D
Approach Vol, veh/h		1602			1618			504			906	
Approach Delay, s/veh		37.3			57.1			170.9			97.6	
Approach LOS		D			E			F			F	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.6	62.8	19.0	34.7	21.6	62.8	30.0	23.7
Change Period (Y+Rc), s	* 5.7	7.5	* 5.7	7.5	* 5.7	7.5	* 5.7	7.5
Max Green Setting (Gmax), s	* 16	55.0	* 13	64.0	* 16	55.3	* 24	53.0
Max Q Clear Time (g_c+I1), s	11.6	32.2	15.3	20.3	11.5	55.3	26.3	14.9
Green Ext Time (p_c), s	0.1	11.3	0.0	1.7	0.1	0.0	0.0	1.3

Intersection Summary	
HCM 6th Ctrl Delay	70.6
HCM 6th LOS	E

Notes

User approved pedestrian interval to be less than phase max green.

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	6.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	65	93	8	3	15
Future Vol, veh/h	6	65	93	8	3	15
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	-	-	-	-	-
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	7	71	101	9	3	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	222	11	19	0	-	0
Stage 1	11	-	-	-	-	-
Stage 2	211	-	-	-	-	-
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	766	1070	1597	-	-	-
Stage 1	1012	-	-	-	-	-
Stage 2	824	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	717	1070	1597	-	-	-
Mov Cap-2 Maneuver	717	-	-	-	-	-
Stage 1	947	-	-	-	-	-
Stage 2	824	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.8	6.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1597	-	1027	-	-
HCM Lane V/C Ratio	0.063	-	0.075	-	-
HCM Control Delay (s)	7.4	0	8.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	-	-

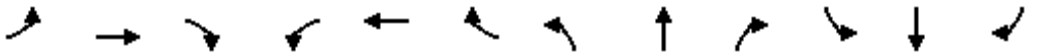
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	0	4	135	20	79	55	195	81	53	233	42
Future Volume (veh/h)	12	0	4	135	20	79	55	195	81	53	233	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	13	0	4	128	49	86	60	212	88	58	253	46
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	39	0	35	265	91	159	114	418	354	111	415	352
Arrive On Green	0.02	0.00	0.02	0.15	0.15	0.15	0.06	0.22	0.22	0.06	0.22	0.22
Sat Flow, veh/h	1781	0	1585	1781	609	1069	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	13	0	4	128	0	135	60	212	88	58	253	46
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	0	1678	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	0.2	0.0	0.1	2.2	0.0	2.5	1.1	3.3	1.5	1.0	4.0	0.8
Cycle Q Clear(g_c), s	0.2	0.0	0.1	2.2	0.0	2.5	1.1	3.3	1.5	1.0	4.0	0.8
Prop In Lane	1.00		1.00	1.00		0.64	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	39	0	35	265	0	250	114	418	354	111	415	352
V/C Ratio(X)	0.33	0.00	0.12	0.48	0.00	0.54	0.53	0.51	0.25	0.52	0.61	0.13
Avail Cap(c_a), veh/h	968	0	861	995	0	937	296	1073	909	350	1129	957
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.0	0.0	15.9	12.9	0.0	13.1	15.0	11.3	10.6	15.0	11.6	10.3
Incr Delay (d2), s/veh	4.9	0.0	1.5	1.4	0.0	1.8	3.7	1.0	0.4	3.7	1.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.0	0.8	0.0	0.8	0.5	1.1	0.4	0.5	1.4	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	20.9	0.0	17.3	14.3	0.0	14.9	18.7	12.2	10.9	18.8	13.0	10.5
LnGrp LOS	C	A	B	B	A	B	B	B	B	B	B	B
Approach Vol, veh/h		17			263			360			357	
Approach Delay, s/veh		20.1			14.6			13.0			13.7	
Approach LOS		C			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.6	11.9		5.2	6.6	11.8		9.4				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	6.5	19.0		18.0	5.5	20.0		18.5				
Max Q Clear Time (g_c+I1), s	3.0	5.3		2.2	3.1	6.0		4.5				
Green Ext Time (p_c), s	0.0	1.2		0.0	0.0	1.3		0.9				

Intersection Summary			
HCM 6th Ctrl Delay		13.8	
HCM 6th LOS		B	

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	12	39	197	28	25	120	282	96	16	318	50
Future Volume (veh/h)	7	12	39	197	28	25	120	282	96	16	318	50
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	8	13	42	136	140	27	130	307	104	17	346	54
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	114	25	80	283	242	47	175	742	247	38	638	99
Arrive On Green	0.06	0.06	0.06	0.16	0.16	0.16	0.10	0.28	0.28	0.02	0.21	0.21
Sat Flow, veh/h	1781	389	1256	1781	1524	294	1781	2620	871	1781	3084	477
Grp Volume(v), veh/h	8	0	55	136	0	167	130	206	205	17	198	202
Grp Sat Flow(s),veh/h/ln	1781	0	1644	1781	0	1817	1781	1777	1714	1781	1777	1785
Q Serve(g_s), s	0.2	0.0	1.2	2.6	0.0	3.2	2.7	3.6	3.7	0.4	3.8	3.9
Cycle Q Clear(g_c), s	0.2	0.0	1.2	2.6	0.0	3.2	2.7	3.6	3.7	0.4	3.8	3.9
Prop In Lane	1.00		0.76	1.00		0.16	1.00		0.51	1.00		0.27
Lane Grp Cap(c), veh/h	114	0	105	283	0	289	175	503	485	38	367	369
V/C Ratio(X)	0.07	0.00	0.52	0.48	0.00	0.58	0.74	0.41	0.42	0.44	0.54	0.55
Avail Cap(c_a), veh/h	841	0	777	865	0	882	234	932	899	257	956	960
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	16.8	0.0	17.3	14.6	0.0	14.8	16.7	11.1	11.1	18.4	13.5	13.5
Incr Delay (d2), s/veh	0.3	0.0	4.0	1.3	0.0	1.8	8.5	0.5	0.6	7.8	1.2	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.5	1.0	0.0	1.3	1.3	1.2	1.2	0.2	1.4	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.0	0.0	21.3	15.8	0.0	16.7	25.2	11.6	11.7	26.2	14.7	14.8
LnGrp LOS	B	A	C	B	A	B	C	B	B	C	B	B
Approach Vol, veh/h		63			303			541			417	
Approach Delay, s/veh		20.7			16.3			14.9			15.2	
Approach LOS		C			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.3	15.3		6.9	8.2	12.4		10.6				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	20.0		18.0	5.0	20.5		18.5				
Max Q Clear Time (g_c+I1), s	2.4	5.7		3.2	4.7	5.9		5.2				
Green Ext Time (p_c), s	0.0	2.1		0.2	0.0	2.0		1.1				

Intersection Summary			
HCM 6th Ctrl Delay		15.6	
HCM 6th LOS		B	

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	97	0	29	0	161	55	30	347	0
Future Volume (veh/h)	0	0	0	97	0	29	0	161	55	30	347	0
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	68	51	32	0	175	60	33	377	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	8	8	0	242	146	92	8	583	193	74	1649	0
Arrive On Green	0.00	0.00	0.00	0.14	0.14	0.14	0.00	0.22	0.22	0.04	0.46	0.00
Sat Flow, veh/h	1781	1870	0	1781	1075	674	1781	2621	869	1781	3647	0
Grp Volume(v), veh/h	0	0	0	68	0	83	0	117	118	33	377	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	0	1749	1781	1777	1714	1781	1777	0
Q Serve(g_s), s	0.0	0.0	0.0	0.8	0.0	1.0	0.0	1.2	1.3	0.4	1.4	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.8	0.0	1.0	0.0	1.2	1.3	0.4	1.4	0.0
Prop In Lane	1.00		0.00	1.00		0.39	1.00		0.51	1.00		0.00
Lane Grp Cap(c), veh/h	8	8	0	242	0	237	8	395	381	74	1649	0
V/C Ratio(X)	0.00	0.00	0.00	0.28	0.00	0.35	0.00	0.30	0.31	0.45	0.23	0.00
Avail Cap(c_a), veh/h	1426	1497	0	1466	0	1439	396	1565	1509	452	3240	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	8.7	0.0	8.8	0.0	7.3	7.3	10.5	3.6	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.6	0.0	0.9	0.0	0.4	0.5	4.2	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.2	0.0	0.3	0.0	0.3	0.3	0.2	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	9.4	0.0	9.7	0.0	7.7	7.8	14.7	3.7	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	B	A	A
Approach Vol, veh/h		0			151			235			410	
Approach Delay, s/veh		0.0			9.5			7.7			4.6	
Approach LOS					A			A			A	

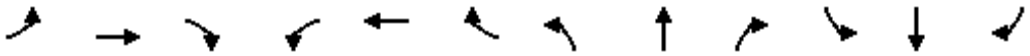
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.4	9.5		0.0	0.0	14.9		7.6				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.7	19.8		18.0	5.0	20.5		18.5				
Max Q Clear Time (g_c+I1), s	2.4	3.3		0.0	0.0	3.4		3.0				
Green Ext Time (p_c), s	0.0	1.2		0.0	0.0	2.2		0.5				

Intersection Summary		
HCM 6th Ctrl Delay		6.4
HCM 6th LOS		A

Notes

User approved volume balancing among the lanes for turning movement.

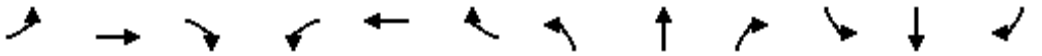
HCM 6th Edition methodology expects strict NEMA phasing.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	235	824	0	0	894	100	0	0	0	56	0	130
Future Volume (vph)	235	824	0	0	894	100	0	0	0	56	0	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	7.5			7.5	7.5					5.8	
Lane Util. Factor	0.97	0.95			0.95	1.00					1.00	
Frt	1.00	1.00			1.00	0.85					0.91	
Flt Protected	0.95	1.00			1.00	1.00					0.99	
Satd. Flow (prot)	3433	3539			3539	1583					1662	
Flt Permitted	0.95	1.00			1.00	1.00					0.90	
Satd. Flow (perm)	3433	3539			3539	1583					1515	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	255	896	0	0	972	109	0	0	0	61	0	141
RTOR Reduction (vph)	0	0	0	0	0	68	0	0	0	0	117	0
Lane Group Flow (vph)	255	896	0	0	972	41	0	0	0	0	85	0
Turn Type	Prot	NA		Prot	NA	Perm	Perm		Perm	Perm	NA	
Protected Phases	5	2		1	6			3			4	
Permitted Phases						6	3		3	4		
Actuated Green, G (s)	15.6	75.7			55.4	55.4					22.2	
Effective Green, g (s)	15.6	75.7			55.4	55.4					22.2	
Actuated g/C Ratio	0.11	0.51			0.38	0.38					0.15	
Clearance Time (s)	4.7	7.5			7.5	7.5					5.8	
Vehicle Extension (s)	3.0	3.0			3.0	3.0					3.0	
Lane Grp Cap (vph)	362	1813			1327	593					227	
v/s Ratio Prot	c0.07	0.25			c0.27							
v/s Ratio Perm						0.03					c0.06	
v/c Ratio	0.70	0.49			0.73	0.07					0.37	
Uniform Delay, d1	63.8	23.5			39.8	29.6					56.5	
Progression Factor	1.00	1.00			1.00	1.00					1.00	
Incremental Delay, d2	6.1	1.0			3.6	0.2					4.6	
Delay (s)	69.9	24.5			43.4	29.8					61.1	
Level of Service	E	C			D	C					E	
Approach Delay (s)		34.5			42.0			0.0			61.1	
Approach LOS		C			D			A			E	

Intersection Summary			
HCM 2000 Control Delay	40.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	147.7	Sum of lost time (s)	23.1
Intersection Capacity Utilization	57.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

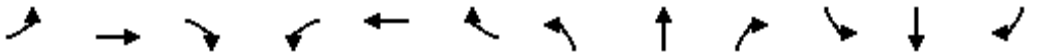


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	427	1191	0	704	100	762	8	243	0	0	0
Future Volume (veh/h)	0	427	1191	0	704	100	762	8	243	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	464	1295	0	765	109	914	0	179			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	1902	1342	0	2733	848	1110	0	494			
Arrive On Green	0.00	0.54	0.54	0.00	0.54	0.54	0.31	0.00	0.31			
Sat Flow, veh/h	0	3647	1585	0	5274	1585	3563	0	1585			
Grp Volume(v), veh/h	0	464	1295	0	765	109	914	0	179			
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1702	1585	1781	0	1585			
Q Serve(g_s), s	0.0	6.2	47.5	0.0	7.3	3.0	21.1	0.0	7.8			
Cycle Q Clear(g_c), s	0.0	6.2	47.5	0.0	7.3	3.0	21.1	0.0	7.8			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1902	1342	0	2733	848	1110	0	494			
V/C Ratio(X)	0.00	0.24	0.96	0.00	0.28	0.13	0.82	0.00	0.36			
Avail Cap(c_a), veh/h	0	1902	1342	0	2733	848	1963	0	873			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	11.0	4.7	0.0	11.3	10.3	28.3	0.0	23.7			
Incr Delay (d2), s/veh	0.0	0.3	17.5	0.0	0.1	0.1	1.6	0.0	0.4			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	2.4	34.7	0.0	2.6	1.0	8.9	0.0	2.9			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	11.3	22.2	0.0	11.3	10.4	29.9	0.0	24.2			
LnGrp LOS	A	B	C	A	B	B	C	A	C			
Approach Vol, veh/h		1759			874			1093				
Approach Delay, s/veh		19.3			11.2			29.0				
Approach LOS		B			B			C				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		55.0				55.0		33.7				
Change Period (Y+Rc), s		7.5				7.5		6.1				
Max Green Setting (Gmax), s		47.5				47.5		48.9				
Max Q Clear Time (g_c+I1), s		49.5				9.3		23.1				
Green Ext Time (p_c), s		0.0				6.7		4.6				

Intersection Summary	
HCM 6th Ctrl Delay	20.2
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.



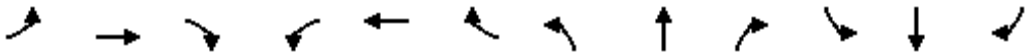
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↱		↑↑	↱				↰	✣	↱
Traffic Volume (veh/h)	0	1753	668	0	1360	306	0	0	0	174	12	1059
Future Volume (veh/h)	0	1753	668	0	1360	306	0	0	0	174	12	1059
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	1870	1870
Adj Flow Rate, veh/h	0	1905	726	0	1478	333				130	0	1223
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	2786	865	0	1939	1350				545	0	971
Arrive On Green	0.00	0.55	0.55	0.00	0.55	0.55				0.31	0.00	0.31
Sat Flow, veh/h	0	5274	1585	0	3647	1585				1781	0	3170
Grp Volume(v), veh/h	0	1905	726	0	1478	333				130	0	1223
Grp Sat Flow(s),veh/h/ln	0	1702	1585	0	1777	1585				1781	0	1585
Q Serve(g_s), s	0.0	24.8	35.2	0.0	29.7	3.6				5.0	0.0	28.1
Cycle Q Clear(g_c), s	0.0	24.8	35.2	0.0	29.7	3.6				5.0	0.0	28.1
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2786	865	0	1939	1350				545	0	971
V/C Ratio(X)	0.00	0.68	0.84	0.00	0.76	0.25				0.24	0.00	1.26
Avail Cap(c_a), veh/h	0	2910	903	0	1939	1350				545	0	971
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	15.1	17.5	0.0	16.2	1.3				23.8	0.0	31.8
Incr Delay (d2), s/veh	0.0	0.6	6.9	0.0	2.9	0.4				1.0	0.0	125.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	9.0	13.3	0.0	11.8	3.8				2.2	0.0	27.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	15.8	24.4	0.0	19.1	1.7				24.9	0.0	157.2
LnGrp LOS	A	B	C	A	B	A				C	A	F
Approach Vol, veh/h		2631			1811						1353	
Approach Delay, s/veh		18.1			15.9						144.4	
Approach LOS		B			B						F	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	57.6	34.2	57.6
Change Period (Y+Rc), s	7.5	6.1	7.5
Max Green Setting (Gmax), s	52.3	28.1	48.5
Max Q Clear Time (g_c+I1), s	37.2	30.1	31.7
Green Ext Time (p_c), s	12.8	0.0	11.2

Intersection Summary	
HCM 6th Ctrl Delay	46.9
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	167	1836	177	141	1410	555	172	233	141	426	162	129
Future Volume (veh/h)	167	1836	177	141	1410	555	172	233	141	426	162	129
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	182	1996	192	153	1533	603	187	253	153	463	176	140
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	199	2007	623	198	1396	863	153	299	430	523	217	173
Arrive On Green	0.11	0.39	0.39	0.11	0.39	0.39	0.09	0.16	0.16	0.15	0.23	0.23
Sat Flow, veh/h	1781	5106	1585	1781	3554	1585	1781	1870	1585	3456	965	767
Grp Volume(v), veh/h	182	1996	192	153	1533	603	187	253	153	463	0	316
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1777	1585	1781	1870	1585	1728	0	1732
Q Serve(g_s), s	14.5	55.8	12.0	12.0	56.3	40.1	12.3	18.8	11.2	18.8	0.0	24.8
Cycle Q Clear(g_c), s	14.5	55.8	12.0	12.0	56.3	40.1	12.3	18.8	11.2	18.8	0.0	24.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.44
Lane Grp Cap(c), veh/h	199	2007	623	198	1396	863	153	299	430	523	0	390
V/C Ratio(X)	0.92	0.99	0.31	0.77	1.10	0.70	1.22	0.85	0.36	0.88	0.00	0.81
Avail Cap(c_a), veh/h	199	2007	623	199	1396	863	153	653	730	634	0	774
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	63.0	43.3	30.0	61.9	43.5	24.0	65.5	58.5	42.1	59.6	0.0	52.6
Incr Delay (d2), s/veh	40.8	18.8	1.3	16.8	55.5	2.5	145.0	6.5	0.5	12.3	0.0	4.0
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	8.8	26.7	4.9	6.4	35.2	15.4	11.8	9.5	4.5	9.2	0.0	11.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	103.8	62.1	31.3	78.6	99.0	26.5	210.5	65.0	42.6	71.9	0.0	56.6
LnGrp LOS	F	E	C	E	F	C	F	E	D	E	A	E
Approach Vol, veh/h		2370			2289			593			779	
Approach Delay, s/veh		62.8			78.6			105.1			65.7	
Approach LOS		E			E			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.7	63.8	18.0	39.8	21.7	63.8	27.4	30.4
Change Period (Y+Rc), s	* 5.7	7.5	* 5.7	7.5	* 5.7	7.5	* 5.7	7.5
Max Green Setting (Gmax), s	* 16	56.3	* 12	64.0	* 16	56.3	* 26	50.0
Max Q Clear Time (g_c+I1), s	14.0	57.8	14.3	26.8	16.5	58.3	20.8	20.8
Green Ext Time (p_c), s	0.1	0.0	0.0	2.2	0.0	0.0	0.9	2.1

Intersection Summary		
HCM 6th Ctrl Delay		73.3
HCM 6th LOS		E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	9.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	390	307	25	19	17
Future Vol, veh/h	13	390	307	25	19	17
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	-	-	-	-	-
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	14	424	334	27	21	18

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	725	30	39	0	-	0
Stage 1	30	-	-	-	-	-
Stage 2	695	-	-	-	-	-
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	392	1044	1571	-	-	-
Stage 1	993	-	-	-	-	-
Stage 2	495	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	307	1044	1571	-	-	-
Mov Cap-2 Maneuver	307	-	-	-	-	-
Stage 1	779	-	-	-	-	-
Stage 2	495	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.7	7.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1571	-	969	-	-
HCM Lane V/C Ratio	0.212	-	0.452	-	-
HCM Control Delay (s)	7.9	0	11.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.8	-	2.4	-	-

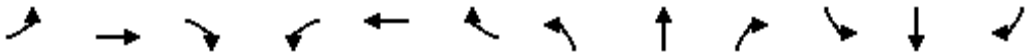
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	0	15	110	12	42	53	299	133	69	328	43
Future Volume (veh/h)	24	0	15	110	12	42	53	299	133	69	328	43
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	26	0	16	90	56	46	58	325	145	75	357	47
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	85	0	75	210	112	92	109	496	420	130	518	439
Arrive On Green	0.05	0.00	0.05	0.12	0.12	0.12	0.06	0.26	0.26	0.07	0.28	0.28
Sat Flow, veh/h	1781	0	1585	1781	950	780	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	26	0	16	90	0	102	58	325	145	75	357	47
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	0	1730	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	0.5	0.0	0.4	1.7	0.0	2.0	1.1	5.6	2.7	1.5	6.2	0.8
Cycle Q Clear(g_c), s	0.5	0.0	0.4	1.7	0.0	2.0	1.1	5.6	2.7	1.5	6.2	0.8
Prop In Lane	1.00		1.00	1.00		0.45	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	85	0	75	210	0	204	109	496	420	130	518	439
V/C Ratio(X)	0.31	0.00	0.21	0.43	0.00	0.50	0.53	0.66	0.35	0.58	0.69	0.11
Avail Cap(c_a), veh/h	884	0	787	884	0	859	270	1057	896	270	1057	896
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	16.7	0.0	16.6	14.9	0.0	15.0	16.5	11.9	10.8	16.3	11.7	9.8
Incr Delay (d2), s/veh	2.0	0.0	1.4	1.4	0.0	1.9	4.0	1.5	0.5	4.0	1.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.1	0.6	0.0	0.8	0.5	2.0	0.8	0.6	2.2	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.7	0.0	18.0	16.2	0.0	16.9	20.5	13.3	11.3	20.2	13.4	9.9
LnGrp LOS	B	A	B	B	A	B	C	B	B	C	B	A
Approach Vol, veh/h		42			192			528			479	
Approach Delay, s/veh		18.4			16.6			13.6			14.1	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.2	14.1		6.2	6.7	14.5		8.8				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	20.5		18.0	5.5	20.5		18.0				
Max Q Clear Time (g_c+I1), s	3.5	7.6		2.5	3.1	8.2		4.0				
Green Ext Time (p_c), s	0.0	2.0		0.1	0.0	1.8		0.6				

Intersection Summary		
HCM 6th Ctrl Delay		14.4
HCM 6th LOS		B

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	15	58	121	12	18	127	468	187	29	382	51
Future Volume (veh/h)	6	15	58	121	12	18	127	468	187	29	382	51
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	7	16	63	82	82	20	138	509	203	32	415	55
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	138	26	101	196	160	39	178	791	314	67	809	107
Arrive On Green	0.08	0.08	0.08	0.11	0.11	0.11	0.10	0.32	0.32	0.04	0.26	0.26
Sat Flow, veh/h	1781	331	1304	1781	1452	354	1781	2484	986	1781	3157	416
Grp Volume(v), veh/h	7	0	79	82	0	102	138	363	349	32	233	237
Grp Sat Flow(s),veh/h/ln	1781	0	1636	1781	0	1807	1781	1777	1693	1781	1777	1796
Q Serve(g_s), s	0.1	0.0	1.8	1.7	0.0	2.1	3.0	6.9	7.0	0.7	4.4	4.5
Cycle Q Clear(g_c), s	0.1	0.0	1.8	1.7	0.0	2.1	3.0	6.9	7.0	0.7	4.4	4.5
Prop In Lane	1.00		0.80	1.00		0.20	1.00		0.58	1.00		0.23
Lane Grp Cap(c), veh/h	138	0	127	196	0	199	178	566	539	67	455	460
V/C Ratio(X)	0.05	0.00	0.62	0.42	0.00	0.51	0.78	0.64	0.65	0.48	0.51	0.52
Avail Cap(c_a), veh/h	813	0	747	813	0	825	339	942	897	230	834	843
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	16.8	0.0	17.6	16.4	0.0	16.6	17.3	11.5	11.5	18.6	12.5	12.6
Incr Delay (d2), s/veh	0.2	0.0	5.0	1.4	0.0	2.0	7.0	1.2	1.3	5.2	0.9	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.8	0.7	0.0	0.9	1.4	2.3	2.2	0.3	1.5	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.0	0.0	22.6	17.8	0.0	18.6	24.3	12.7	12.8	23.8	13.4	13.5
LnGrp LOS	B	A	C	B	A	B	C	B	B	C	B	B
Approach Vol, veh/h		86			184			850			502	
Approach Delay, s/veh		22.1			18.2			14.7			14.1	
Approach LOS		C			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.0	17.1		7.6	8.4	14.6		8.8				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.1	20.9		18.0	7.5	18.5		18.0				
Max Q Clear Time (g_c+I1), s	2.7	9.0		3.8	5.0	6.5		4.1				
Green Ext Time (p_c), s	0.0	3.6		0.3	0.1	2.2		0.6				

Intersection Summary			
HCM 6th Ctrl Delay		15.3	
HCM 6th LOS		B	

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	60	0	38	0	428	86	33	241	0
Future Volume (veh/h)	0	0	0	60	0	38	0	428	86	33	241	0
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	53	17	41	0	465	93	36	262	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	7	7	0	190	52	125	7	952	189	79	1926	0
Arrive On Green	0.00	0.00	0.00	0.11	0.11	0.11	0.00	0.32	0.32	0.04	0.54	0.00
Sat Flow, veh/h	1781	1870	0	1781	486	1173	1781	2954	587	1781	3647	0
Grp Volume(v), veh/h	0	0	0	53	0	58	0	279	279	36	262	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	0	1659	1781	1777	1765	1781	1777	0
Q Serve(g_s), s	0.0	0.0	0.0	0.7	0.0	0.8	0.0	3.2	3.3	0.5	0.9	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.7	0.0	0.8	0.0	3.2	3.3	0.5	0.9	0.0
Prop In Lane	1.00		0.00	1.00		0.71	1.00		0.33	1.00		0.00
Lane Grp Cap(c), veh/h	7	7	0	190	0	177	7	573	569	79	1926	0
V/C Ratio(X)	0.00	0.00	0.00	0.28	0.00	0.33	0.00	0.49	0.49	0.46	0.14	0.00
Avail Cap(c_a), veh/h	1252	1314	0	1259	0	1173	348	1387	1378	410	2900	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	10.5	0.0	10.6	0.0	7.0	7.0	11.9	2.9	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.8	0.0	1.1	0.0	0.6	0.7	4.1	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.2	0.0	0.3	0.0	0.7	0.7	0.2	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	11.3	0.0	11.7	0.0	7.6	7.6	16.1	2.9	0.0
LnGrp LOS	A	A	A	B	A	B	A	A	A	B	A	A
Approach Vol, veh/h		0			111			558			298	
Approach Delay, s/veh		0.0			11.5			7.6			4.5	
Approach LOS					B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.6	12.8		0.0	0.0	18.4		7.2				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.9	20.0		18.0	5.0	20.9		18.1				
Max Q Clear Time (g_c+I1), s	2.5	5.3		0.0	0.0	2.9		2.8				
Green Ext Time (p_c), s	0.0	3.0		0.0	0.0	1.5		0.3				

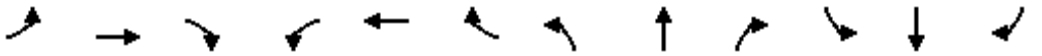
Intersection Summary		
HCM 6th Ctrl Delay	7.1	
HCM 6th LOS	A	

Notes

User approved volume balancing among the lanes for turning movement.

Appendix F: Synchro Reports – Year 2035 Plus Project

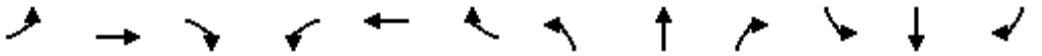
HCM 6th Edition methodology expects strict NEMA phasing.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	113	767	0	0	676	41	0	0	0	93	0	266
Future Volume (vph)	113	767	0	0	676	41	0	0	0	93	0	266
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	7.5			7.5	7.5				5.8	5.8	5.8
Lane Util. Factor	0.97	0.95			0.95	1.00				0.95	0.91	0.95
Frt	1.00	1.00			1.00	0.85				1.00	0.86	0.85
Flt Protected	0.95	1.00			1.00	1.00				0.95	1.00	1.00
Satd. Flow (prot)	3433	3539			3539	1583				1681	1453	1504
Flt Permitted	0.95	1.00			1.00	1.00				0.76	0.99	1.00
Satd. Flow (perm)	3433	3539			3539	1583				1340	1439	1504
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	123	834	0	0	735	45	0	0	0	101	0	289
RTOR Reduction (vph)	0	0	0	0	0	34	0	0	0	0	102	110
Lane Group Flow (vph)	123	834	0	0	735	11	0	0	0	91	47	40
Turn Type	Prot	NA		Prot	NA	Perm				Perm	NA	Perm
Protected Phases	5	2		1	6			3			4	
Permitted Phases						6	3			4		4
Actuated Green, G (s)	7.7	45.4			33.0	33.0				34.7	34.7	34.7
Effective Green, g (s)	7.7	45.4			33.0	33.0				34.7	34.7	34.7
Actuated g/C Ratio	0.06	0.35			0.25	0.25				0.27	0.27	0.27
Clearance Time (s)	4.7	7.5			7.5	7.5				5.8	5.8	5.8
Vehicle Extension (s)	3.0	3.0			3.0	3.0				3.0	3.0	3.0
Lane Grp Cap (vph)	203	1236			899	402				357	384	401
v/s Ratio Prot	0.04	c0.24			c0.21							
v/s Ratio Perm						0.01				c0.07	0.03	0.03
v/c Ratio	0.61	0.67			0.82	0.03				0.25	0.12	0.10
Uniform Delay, d1	59.6	36.0			45.6	36.4				37.4	36.1	35.8
Progression Factor	1.00	1.00			1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2	5.0	3.0			8.2	0.1				1.7	0.7	0.5
Delay (s)	64.7	38.9			53.8	36.5				39.1	36.7	36.3
Level of Service	E	D			D	D				D	D	D
Approach Delay (s)		42.2			52.8			0.0			37.1	
Approach LOS		D			D			A			D	

Intersection Summary			
HCM 2000 Control Delay	45.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	129.9	Sum of lost time (s)	23.1
Intersection Capacity Utilization	51.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

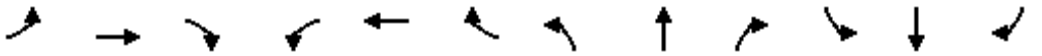


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	389	812	0	335	82	269	0	233	0	0	0
Future Volume (veh/h)	0	389	812	0	335	82	269	0	233	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	423	883	0	364	89	371	0	169			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	2357	1296	0	3387	1051	550	0	245			
Arrive On Green	0.00	0.66	0.66	0.00	0.66	0.66	0.15	0.00	0.15			
Sat Flow, veh/h	0	3647	1585	0	5274	1585	3563	0	1585			
Grp Volume(v), veh/h	0	423	883	0	364	89	371	0	169			
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1702	1585	1781	0	1585			
Q Serve(g_s), s	0.0	3.4	17.1	0.0	1.9	1.5	7.3	0.0	7.5			
Cycle Q Clear(g_c), s	0.0	3.4	17.1	0.0	1.9	1.5	7.3	0.0	7.5			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	2357	1296	0	3387	1051	550	0	245			
V/C Ratio(X)	0.00	0.18	0.68	0.00	0.11	0.08	0.67	0.00	0.69			
Avail Cap(c_a), veh/h	0	2357	1296	0	3387	1051	2239	0	996			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	4.8	2.8	0.0	4.6	4.5	29.8	0.0	29.9			
Incr Delay (d2), s/veh	0.0	0.2	2.9	0.0	0.0	0.0	1.5	0.0	3.5			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	1.0	9.2	0.0	0.5	0.4	3.1	0.0	3.0			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	5.0	5.7	0.0	4.6	4.5	31.2	0.0	33.3			
LnGrp LOS	A	A	A	A	A	A	C	A	C			
Approach Vol, veh/h		1306			453			540				
Approach Delay, s/veh		5.5			4.6			31.9				
Approach LOS		A			A			C				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		57.0				57.0		17.6				
Change Period (Y+Rc), s		7.5				7.5		6.1				
Max Green Setting (Gmax), s		49.5				49.5		46.9				
Max Q Clear Time (g_c+I1), s		19.1				3.9		9.5				
Green Ext Time (p_c), s		8.2				3.0		2.0				

Intersection Summary	
HCM 6th Ctrl Delay	11.5
HCM 6th LOS	B

Notes

User approved volume balancing among the lanes for turning movement.



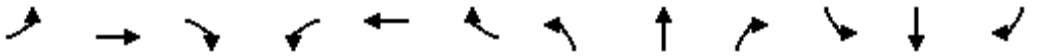
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↱		↑↑	↱				↰	✣	↱
Traffic Volume (veh/h)	0	1174	726	0	604	163	0	0	0	1347	2	124
Future Volume (veh/h)	0	1174	726	0	604	163	0	0	0	1347	2	124
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	1870	1870
Adj Flow Rate, veh/h	0	1276	789	0	657	177				1507	0	91
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	2047	635	0	1425	1399				1717	0	764
Arrive On Green	0.00	0.40	0.40	0.00	0.40	0.40				0.48	0.00	0.48
Sat Flow, veh/h	0	5274	1585	0	3647	1585				3563	0	1585
Grp Volume(v), veh/h	0	1276	789	0	657	177				1507	0	91
Grp Sat Flow(s),veh/h/ln	0	1702	1585	0	1777	1585				1781	0	1585
Q Serve(g_s), s	0.0	23.2	46.5	0.0	15.8	1.7				44.1	0.0	3.7
Cycle Q Clear(g_c), s	0.0	23.2	46.5	0.0	15.8	1.7				44.1	0.0	3.7
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2047	635	0	1425	1399				1717	0	764
V/C Ratio(X)	0.00	0.62	1.24	0.00	0.46	0.13				0.88	0.00	0.12
Avail Cap(c_a), veh/h	0	2047	635	0	1425	1399				1717	0	764
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	27.8	34.8	0.0	25.5	0.9				27.0	0.0	16.5
Incr Delay (d2), s/veh	0.0	0.6	121.8	0.0	1.1	0.2				6.7	0.0	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	9.4	38.9	0.0	6.8	3.3				19.6	0.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	28.4	156.5	0.0	26.6	1.1				33.7	0.0	16.8
LnGrp LOS	A	C	F	A	C	A				C	A	B
Approach Vol, veh/h		2065			834						1598	
Approach Delay, s/veh		77.3			21.2						32.7	
Approach LOS		E			C						C	

Timer - Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		54.0		62.0		54.0						
Change Period (Y+Rc), s		7.5		6.1		7.5						
Max Green Setting (Gmax), s		26.5		55.9		46.5						
Max Q Clear Time (g_c+I1), s		48.5		46.1		17.8						
Green Ext Time (p_c), s		0.0		5.1		5.7						

Intersection Summary												
HCM 6th Ctrl Delay			51.1									
HCM 6th LOS			D									

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	118	1260	181	120	1292	179	226	165	153	600	179	99
Future Volume (veh/h)	118	1260	181	120	1292	179	226	165	153	600	179	99
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	128	1370	197	130	1404	195	246	179	166	652	195	108
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	196	1923	597	197	1338	934	164	220	361	734	269	149
Arrive On Green	0.11	0.38	0.38	0.11	0.38	0.38	0.09	0.12	0.12	0.21	0.24	0.24
Sat Flow, veh/h	1781	5106	1585	1781	3554	1585	1781	1870	1585	3456	1131	626
Grp Volume(v), veh/h	128	1370	197	130	1404	195	246	179	166	652	0	303
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1777	1585	1781	1870	1585	1728	0	1758
Q Serve(g_s), s	9.9	33.0	12.8	10.1	54.3	8.3	13.3	13.5	13.0	26.4	0.0	22.9
Cycle Q Clear(g_c), s	9.9	33.0	12.8	10.1	54.3	8.3	13.3	13.5	13.0	26.4	0.0	22.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.36
Lane Grp Cap(c), veh/h	196	1923	597	197	1338	934	164	220	361	734	0	418
V/C Ratio(X)	0.65	0.71	0.33	0.66	1.05	0.21	1.50	0.81	0.46	0.89	0.00	0.73
Avail Cap(c_a), veh/h	198	1923	597	201	1338	934	164	454	560	1038	0	792
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	61.5	38.3	32.0	61.6	44.9	13.9	65.4	62.1	48.0	55.1	0.0	50.6
Incr Delay (d2), s/veh	7.3	2.3	1.5	7.6	38.6	0.1	252.9	7.1	0.9	7.1	0.0	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	14.2	5.2	5.0	30.9	3.0	17.6	6.9	5.3	12.2	0.0	10.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	68.8	40.6	33.5	69.1	83.5	14.0	318.3	69.2	48.9	62.2	0.0	53.0
LnGrp LOS	E	D	C	E	F	B	F	E	D	E	A	D
Approach Vol, veh/h		1695			1729			591			955	
Approach Delay, s/veh		41.9			74.6			167.2			59.3	
Approach LOS		D			E			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.6	61.8	19.0	41.8	21.6	61.8	36.3	24.4
Change Period (Y+Rc), s	* 5.7	7.5	* 5.7	7.5	* 5.7	7.5	* 5.7	7.5
Max Green Setting (Gmax), s	* 16	54.0	* 13	65.0	* 16	54.3	* 43	35.0
Max Q Clear Time (g_c+I1), s	12.1	35.0	15.3	24.9	11.9	56.3	28.4	15.5
Green Ext Time (p_c), s	0.1	10.6	0.0	2.1	0.1	0.0	2.2	1.5

Intersection Summary	
HCM 6th Ctrl Delay	71.5
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

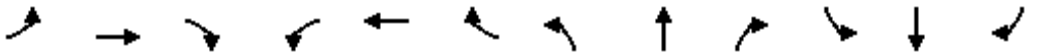
Intersection	
Int Delay, s/veh	6.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	65	93	8	3	15
Future Vol, veh/h	6	65	93	8	3	15
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	-	-	-	-	-
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	7	71	101	9	3	16

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	222	11	19	0	-	0
Stage 1	11	-	-	-	-	-
Stage 2	211	-	-	-	-	-
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	766	1070	1597	-	-	-
Stage 1	1012	-	-	-	-	-
Stage 2	824	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	717	1070	1597	-	-	-
Mov Cap-2 Maneuver	717	-	-	-	-	-
Stage 1	947	-	-	-	-	-
Stage 2	824	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.8	6.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1597	-	1027	-	-
HCM Lane V/C Ratio	0.063	-	0.075	-	-
HCM Control Delay (s)	7.4	0	8.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0.2	-	-



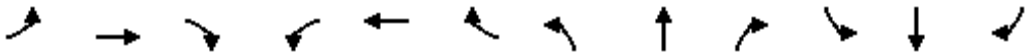
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	0	4	197	20	94	55	195	107	60	233	42
Future Volume (veh/h)	12	0	4	197	20	94	55	195	107	60	233	42
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	13	0	4	169	85	102	60	212	116	65	253	46
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	39	0	34	335	146	175	112	398	337	119	405	343
Arrive On Green	0.02	0.00	0.02	0.19	0.19	0.19	0.06	0.21	0.21	0.07	0.22	0.22
Sat Flow, veh/h	1781	0	1585	1781	774	929	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	13	0	4	169	0	187	60	212	116	65	253	46
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	0	1703	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	0.3	0.0	0.1	3.0	0.0	3.5	1.2	3.5	2.2	1.2	4.3	0.8
Cycle Q Clear(g_c), s	0.3	0.0	0.1	3.0	0.0	3.5	1.2	3.5	2.2	1.2	4.3	0.8
Prop In Lane	1.00		1.00	1.00		0.55	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	39	0	34	335	0	320	112	398	337	119	405	343
V/C Ratio(X)	0.34	0.00	0.12	0.50	0.00	0.58	0.53	0.53	0.34	0.55	0.63	0.13
Avail Cap(c_a), veh/h	910	0	810	935	0	894	278	1008	855	329	1062	900
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	17.0	0.0	16.9	12.8	0.0	13.0	16.0	12.3	11.8	15.9	12.5	11.1
Incr Delay (d2), s/veh	5.0	0.0	1.5	1.2	0.0	1.7	3.9	1.1	0.6	3.9	1.6	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.0	1.1	0.0	1.2	0.5	1.3	0.7	0.5	1.6	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	22.0	0.0	18.4	14.0	0.0	14.7	19.9	13.4	12.4	19.8	14.1	11.3
LnGrp LOS	C	A	B	B	A	B	B	B	B	B	B	B
Approach Vol, veh/h		17			356			388			364	
Approach Delay, s/veh		21.1			14.4			14.1			14.8	
Approach LOS		C			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.9	12.0		5.3	6.7	12.1		11.1				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	6.5	19.0		18.0	5.5	20.0		18.5				
Max Q Clear Time (g_c+I1), s	3.2	5.5		2.3	3.2	6.3		5.5				
Green Ext Time (p_c), s	0.0	1.3		0.0	0.0	1.3		1.3				

Intersection Summary			
HCM 6th Ctrl Delay		14.5	
HCM 6th LOS		B	

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	12	39	197	28	25	120	308	96	16	380	50
Future Volume (veh/h)	7	12	39	197	28	25	120	308	96	16	380	50
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	8	13	42	136	140	27	130	335	104	17	413	54
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	113	25	79	280	240	46	171	809	247	38	719	93
Arrive On Green	0.06	0.06	0.06	0.16	0.16	0.16	0.10	0.30	0.30	0.02	0.23	0.23
Sat Flow, veh/h	1781	389	1256	1781	1524	294	1781	2681	819	1781	3162	411
Grp Volume(v), veh/h	8	0	55	136	0	167	130	220	219	17	231	236
Grp Sat Flow(s),veh/h/ln	1781	0	1644	1781	0	1817	1781	1777	1723	1781	1777	1796
Q Serve(g_s), s	0.2	0.0	1.3	2.7	0.0	3.4	2.8	3.9	4.0	0.4	4.6	4.6
Cycle Q Clear(g_c), s	0.2	0.0	1.3	2.7	0.0	3.4	2.8	3.9	4.0	0.4	4.6	4.6
Prop In Lane	1.00		0.76	1.00		0.16	1.00		0.48	1.00		0.23
Lane Grp Cap(c), veh/h	113	0	104	280	0	286	171	536	520	38	404	408
V/C Ratio(X)	0.07	0.00	0.53	0.49	0.00	0.58	0.76	0.41	0.42	0.44	0.57	0.58
Avail Cap(c_a), veh/h	813	0	750	835	0	852	226	901	873	248	923	933
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	17.4	0.0	17.9	15.2	0.0	15.4	17.4	11.0	11.0	19.1	13.5	13.6
Incr Delay (d2), s/veh	0.3	0.0	4.1	1.3	0.0	1.9	10.1	0.5	0.5	7.8	1.3	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	0.5	1.0	0.0	1.3	1.5	1.3	1.3	0.2	1.6	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.7	0.0	22.0	16.5	0.0	17.3	27.5	11.5	11.6	26.9	14.8	14.9
LnGrp LOS	B	A	C	B	A	B	C	B	B	C	B	B
Approach Vol, veh/h		63			303			569			484	
Approach Delay, s/veh		21.5			16.9			15.2			15.3	
Approach LOS		C			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.4	16.4		7.0	8.3	13.5		10.7				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	20.0		18.0	5.0	20.5		18.5				
Max Q Clear Time (g_c+I1), s	2.4	6.0		3.3	4.8	6.6		5.4				
Green Ext Time (p_c), s	0.0	2.2		0.2	0.0	2.4		1.1				

Intersection Summary			
HCM 6th Ctrl Delay		15.9	
HCM 6th LOS		B	

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	97	0	29	0	187	55	30	409	0
Future Volume (veh/h)	0	0	0	97	0	29	0	187	55	30	409	0
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	68	51	32	0	203	60	33	445	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	8	8	0	242	146	92	8	605	174	74	1649	0
Arrive On Green	0.00	0.00	0.00	0.14	0.14	0.14	0.00	0.22	0.22	0.04	0.46	0.00
Sat Flow, veh/h	1781	1870	0	1781	1075	674	1781	2723	784	1781	3647	0
Grp Volume(v), veh/h	0	0	0	68	0	83	0	131	132	33	445	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	0	1749	1781	1777	1729	1781	1777	0
Q Serve(g_s), s	0.0	0.0	0.0	0.8	0.0	1.0	0.0	1.4	1.4	0.4	1.7	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.8	0.0	1.0	0.0	1.4	1.4	0.4	1.7	0.0
Prop In Lane	1.00		0.00	1.00		0.39	1.00		0.45	1.00		0.00
Lane Grp Cap(c), veh/h	8	8	0	242	0	237	8	395	385	74	1649	0
V/C Ratio(X)	0.00	0.00	0.00	0.28	0.00	0.35	0.00	0.33	0.34	0.45	0.27	0.00
Avail Cap(c_a), veh/h	1426	1497	0	1466	0	1439	396	1565	1523	452	3240	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	8.7	0.0	8.8	0.0	7.3	7.4	10.5	3.7	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.6	0.0	0.9	0.0	0.5	0.5	4.2	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.2	0.0	0.3	0.0	0.3	0.3	0.2	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	9.4	0.0	9.7	0.0	7.8	7.9	14.7	3.8	0.0
LnGrp LOS	A	A	A	A	A	A	A	A	A	B	A	A
Approach Vol, veh/h		0			151			263			478	
Approach Delay, s/veh		0.0			9.5			7.9			4.5	
Approach LOS					A			A			A	

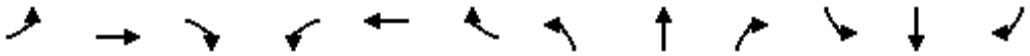
Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.4	9.5		0.0	0.0	14.9		7.6				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.7	19.8		18.0	5.0	20.5		18.5				
Max Q Clear Time (g_c+I1), s	2.4	3.4		0.0	0.0	3.7		3.0				
Green Ext Time (p_c), s	0.0	1.3		0.0	0.0	2.7		0.5				

Intersection Summary	
HCM 6th Ctrl Delay	6.4
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

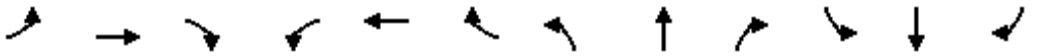
HCM 6th Edition methodology expects strict NEMA phasing.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	308	824	0	0	894	105	0	0	0	58	0	161
Future Volume (vph)	308	824	0	0	894	105	0	0	0	58	0	161
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.7	7.5			7.5	7.5					5.8	
Lane Util. Factor	0.97	0.95			0.95	1.00					1.00	
Frt	1.00	1.00			1.00	0.85					0.90	
Flt Protected	0.95	1.00			1.00	1.00					0.99	
Satd. Flow (prot)	3433	3539			3539	1583					1656	
Flt Permitted	0.95	1.00			1.00	1.00					0.91	
Satd. Flow (perm)	3433	3539			3539	1583					1526	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	335	896	0	0	972	114	0	0	0	63	0	175
RTOR Reduction (vph)	0	0	0	0	0	74	0	0	0	0	116	0
Lane Group Flow (vph)	335	896	0	0	972	40	0	0	0	0	122	0
Turn Type	Prot	NA		Prot	NA	Perm	Perm		Perm	Perm	NA	
Protected Phases	5	2		1	6			3			4	
Permitted Phases						6	3		3	4		
Actuated Green, G (s)	18.5	75.2			52.0	52.0					23.2	
Effective Green, g (s)	18.5	75.2			52.0	52.0					23.2	
Actuated g/C Ratio	0.12	0.51			0.35	0.35					0.16	
Clearance Time (s)	4.7	7.5			7.5	7.5					5.8	
Vehicle Extension (s)	3.0	3.0			3.0	3.0					3.0	
Lane Grp Cap (vph)	428	1795			1241	555					238	
v/s Ratio Prot	c0.10	0.25			c0.27							
v/s Ratio Perm						0.03					c0.08	
v/c Ratio	0.78	0.50			0.78	0.07					0.51	
Uniform Delay, d1	62.9	24.1			43.1	32.0					57.3	
Progression Factor	1.00	1.00			1.00	1.00					1.00	
Incremental Delay, d2	9.0	1.0			5.0	0.3					7.6	
Delay (s)	71.9	25.1			48.0	32.3					64.9	
Level of Service	E	C			D	C					E	
Approach Delay (s)		37.8			46.4			0.0			64.9	
Approach LOS		D			D			A			E	

Intersection Summary			
HCM 2000 Control Delay	44.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	148.2	Sum of lost time (s)	23.1
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

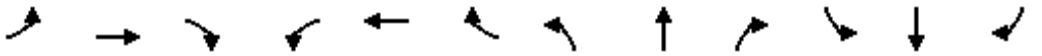


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	427	1191	0	704	100	762	8	243	0	0	0
Future Volume (veh/h)	0	427	1191	0	704	100	762	8	243	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	0	464	1295	0	765	109	914	0	179			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2			
Cap, veh/h	0	1902	1342	0	2733	848	1110	0	494			
Arrive On Green	0.00	0.54	0.54	0.00	0.54	0.54	0.31	0.00	0.31			
Sat Flow, veh/h	0	3647	1585	0	5274	1585	3563	0	1585			
Grp Volume(v), veh/h	0	464	1295	0	765	109	914	0	179			
Grp Sat Flow(s),veh/h/ln	0	1777	1585	0	1702	1585	1781	0	1585			
Q Serve(g_s), s	0.0	6.2	47.5	0.0	7.3	3.0	21.1	0.0	7.8			
Cycle Q Clear(g_c), s	0.0	6.2	47.5	0.0	7.3	3.0	21.1	0.0	7.8			
Prop In Lane	0.00		1.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	0	1902	1342	0	2733	848	1110	0	494			
V/C Ratio(X)	0.00	0.24	0.96	0.00	0.28	0.13	0.82	0.00	0.36			
Avail Cap(c_a), veh/h	0	1902	1342	0	2733	848	1963	0	873			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	0.0	11.0	4.7	0.0	11.3	10.3	28.3	0.0	23.7			
Incr Delay (d2), s/veh	0.0	0.3	17.5	0.0	0.1	0.1	1.6	0.0	0.4			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	0.0	2.4	34.7	0.0	2.6	1.0	8.9	0.0	2.9			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	11.3	22.2	0.0	11.3	10.4	29.9	0.0	24.2			
LnGrp LOS	A	B	C	A	B	B	C	A	C			
Approach Vol, veh/h		1759			874			1093				
Approach Delay, s/veh		19.3			11.2			29.0				
Approach LOS		B			B			C				
Timer - Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		55.0				55.0		33.7				
Change Period (Y+Rc), s		7.5				7.5		6.1				
Max Green Setting (Gmax), s		47.5				47.5		48.9				
Max Q Clear Time (g_c+I1), s		49.5				9.3		23.1				
Green Ext Time (p_c), s		0.0				6.7		4.6				

Intersection Summary	
HCM 6th Ctrl Delay	20.2
HCM 6th LOS	C

Notes

User approved volume balancing among the lanes for turning movement.



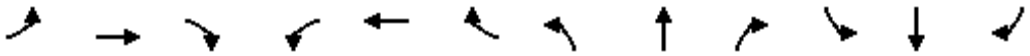
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↱		↑↑	↱				↰	✣	↱
Traffic Volume (veh/h)	0	1768	668	0	1366	322	0	0	0	193	12	1059
Future Volume (veh/h)	0	1768	668	0	1366	322	0	0	0	193	12	1059
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	0	1870	1870				1870	1870	1870
Adj Flow Rate, veh/h	0	1922	726	0	1485	350				144	0	1230
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92				0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	0	2	2				2	2	2
Cap, veh/h	0	2814	874	0	1959	1352				537	0	957
Arrive On Green	0.00	0.55	0.55	0.00	0.55	0.55				0.30	0.00	0.30
Sat Flow, veh/h	0	5274	1585	0	3647	1585				1781	0	3170
Grp Volume(v), veh/h	0	1922	726	0	1485	350				144	0	1230
Grp Sat Flow(s),veh/h/ln	0	1702	1585	0	1777	1585				1781	0	1585
Q Serve(g_s), s	0.0	25.1	35.1	0.0	29.8	3.9				5.7	0.0	27.9
Cycle Q Clear(g_c), s	0.0	25.1	35.1	0.0	29.8	3.9				5.7	0.0	27.9
Prop In Lane	0.00		1.00	0.00		1.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	2814	874	0	1959	1352				537	0	957
V/C Ratio(X)	0.00	0.68	0.83	0.00	0.76	0.26				0.27	0.00	1.29
Avail Cap(c_a), veh/h	0	2954	917	0	1959	1352				537	0	957
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	0.00	1.00	1.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	14.9	17.2	0.0	16.0	1.3				24.5	0.0	32.3
Incr Delay (d2), s/veh	0.0	0.6	6.3	0.0	2.8	0.5				1.2	0.0	136.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	9.0	13.1	0.0	11.8	4.1				2.5	0.0	28.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	15.6	23.5	0.0	18.8	1.7				25.7	0.0	168.9
LnGrp LOS	A	B	C	A	B	A				C	A	F
Approach Vol, veh/h		2648			1835						1374	
Approach Delay, s/veh		17.7			15.6						153.9	
Approach LOS		B			B						F	

Timer - Assigned Phs	2	4	6
Phs Duration (G+Y+Rc), s	58.5	34.0	58.5
Change Period (Y+Rc), s	7.5	6.1	7.5
Max Green Setting (Gmax), s	53.5	27.9	47.5
Max Q Clear Time (g_c+I1), s	37.1	29.9	31.8
Green Ext Time (p_c), s	13.9	0.0	10.8

Intersection Summary	
HCM 6th Ctrl Delay	49.0
HCM 6th LOS	D

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	167	1851	177	141	1416	555	172	233	141	426	162	129
Future Volume (veh/h)	167	1851	177	141	1416	555	172	233	141	426	162	129
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	182	2012	192	153	1539	603	187	253	153	463	176	140
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	199	2006	623	198	1395	863	153	299	430	525	218	173
Arrive On Green	0.11	0.39	0.39	0.11	0.39	0.39	0.09	0.16	0.16	0.15	0.23	0.23
Sat Flow, veh/h	1781	5106	1585	1781	3554	1585	1781	1870	1585	3456	965	767
Grp Volume(v), veh/h	182	2012	192	153	1539	603	187	253	153	463	0	316
Grp Sat Flow(s),veh/h/ln	1781	1702	1585	1781	1777	1585	1781	1870	1585	1728	0	1732
Q Serve(g_s), s	14.5	56.3	12.0	12.0	56.3	40.1	12.3	18.8	11.2	18.8	0.0	24.8
Cycle Q Clear(g_c), s	14.5	56.3	12.0	12.0	56.3	40.1	12.3	18.8	11.2	18.8	0.0	24.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.44
Lane Grp Cap(c), veh/h	199	2006	623	198	1395	863	153	299	430	525	0	391
V/C Ratio(X)	0.92	1.00	0.31	0.77	1.10	0.70	1.22	0.85	0.36	0.88	0.00	0.81
Avail Cap(c_a), veh/h	199	2006	623	199	1395	863	153	639	718	658	0	773
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	63.0	43.5	30.1	61.9	43.6	24.0	65.6	58.5	42.2	59.5	0.0	52.5
Incr Delay (d2), s/veh	41.0	20.8	1.3	16.8	57.5	2.5	145.4	6.6	0.5	11.3	0.0	4.0
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	8.9	27.3	4.9	6.4	35.6	15.4	11.8	9.5	4.5	9.1	0.0	11.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	104.1	64.4	31.4	78.8	101.1	26.5	211.0	65.1	42.7	70.8	0.0	56.5
LnGrp LOS	F	F	C	E	F	C	F	E	D	E	A	E
Approach Vol, veh/h		2386			2295			593			779	
Approach Delay, s/veh		64.7			80.0			105.3			65.0	
Approach LOS		E			E			F			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.7	63.8	18.0	39.9	21.7	63.8	27.5	30.4
Change Period (Y+Rc), s	* 5.7	7.5	* 5.7	7.5	* 5.7	7.5	* 5.7	7.5
Max Green Setting (Gmax), s	* 16	56.3	* 12	64.0	* 16	56.3	* 27	49.0
Max Q Clear Time (g_c+I1), s	14.0	58.3	14.3	26.8	16.5	58.3	20.8	20.8
Green Ext Time (p_c), s	0.1	0.0	0.0	2.2	0.0	0.0	1.0	2.1

Intersection Summary	
HCM 6th Ctrl Delay	74.5
HCM 6th LOS	E

Notes

* HCM 6th computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	9.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	13	390	307	25	19	17
Future Vol, veh/h	13	390	307	25	19	17
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	-	-	-	-	-
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	14	424	334	27	21	18

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	725	30	39	0	-	0
Stage 1	30	-	-	-	-	-
Stage 2	695	-	-	-	-	-
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	392	1044	1571	-	-	-
Stage 1	993	-	-	-	-	-
Stage 2	495	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	307	1044	1571	-	-	-
Mov Cap-2 Maneuver	307	-	-	-	-	-
Stage 1	779	-	-	-	-	-
Stage 2	495	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.7	7.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1571	-	969	-	-
HCM Lane V/C Ratio	0.212	-	0.452	-	-
HCM Control Delay (s)	7.9	0	11.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.8	-	2.4	-	-

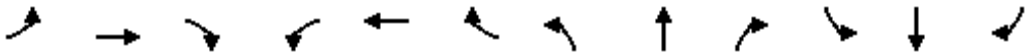
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	0	15	143	12	50	53	299	211	88	328	43
Future Volume (veh/h)	24	0	15	143	12	50	53	299	211	88	328	43
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	26	0	16	111	75	54	58	325	229	96	357	47
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	84	0	75	235	134	96	107	497	422	149	541	459
Arrive On Green	0.05	0.00	0.05	0.13	0.13	0.13	0.06	0.27	0.27	0.08	0.29	0.29
Sat Flow, veh/h	1781	0	1585	1781	1011	728	1781	1870	1585	1781	1870	1585
Grp Volume(v), veh/h	26	0	16	111	0	129	58	325	229	96	357	47
Grp Sat Flow(s),veh/h/ln	1781	0	1585	1781	0	1739	1781	1870	1585	1781	1870	1585
Q Serve(g_s), s	0.5	0.0	0.4	2.2	0.0	2.7	1.2	5.9	4.7	2.0	6.4	0.8
Cycle Q Clear(g_c), s	0.5	0.0	0.4	2.2	0.0	2.7	1.2	5.9	4.7	2.0	6.4	0.8
Prop In Lane	1.00		1.00	1.00		0.42	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	84	0	75	235	0	230	107	497	422	149	541	459
V/C Ratio(X)	0.31	0.00	0.21	0.47	0.00	0.56	0.54	0.65	0.54	0.64	0.66	0.10
Avail Cap(c_a), veh/h	839	0	747	839	0	820	256	1004	851	256	1004	851
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	17.6	0.0	17.5	15.3	0.0	15.5	17.4	12.5	12.0	17.0	11.9	9.9
Incr Delay (d2), s/veh	2.1	0.0	1.4	1.5	0.0	2.1	4.2	1.5	1.1	4.6	1.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	0.1	0.8	0.0	1.0	0.6	2.1	1.4	0.9	2.3	0.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	19.7	0.0	18.9	16.8	0.0	17.7	21.6	13.9	13.1	21.6	13.3	10.0
LnGrp LOS	B	A	B	B	A	B	C	B	B	C	B	B
Approach Vol, veh/h		42			240			612			500	
Approach Delay, s/veh		19.4			17.3			14.3			14.6	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.7	14.7		6.3	6.8	15.6		9.5				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.5	20.5		18.0	5.5	20.5		18.0				
Max Q Clear Time (g_c+I1), s	4.0	7.9		2.5	3.2	8.4		4.7				
Green Ext Time (p_c), s	0.0	2.3		0.1	0.0	1.8		0.8				

Intersection Summary			
HCM 6th Ctrl Delay		15.1	
HCM 6th LOS		B	

Notes

User approved volume balancing among the lanes for turning movement.



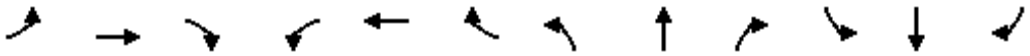
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	15	58	121	12	18	127	546	187	29	415	51
Future Volume (veh/h)	6	15	58	121	12	18	127	546	187	29	415	51
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	7	16	63	82	82	20	138	593	203	32	451	55
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	136	25	99	191	156	38	178	881	301	66	881	107
Arrive On Green	0.08	0.08	0.08	0.11	0.11	0.11	0.10	0.34	0.34	0.04	0.28	0.28
Sat Flow, veh/h	1781	331	1304	1781	1452	354	1781	2599	888	1781	3190	387
Grp Volume(v), veh/h	7	0	79	82	0	102	138	405	391	32	250	256
Grp Sat Flow(s),veh/h/ln	1781	0	1636	1781	0	1807	1781	1777	1711	1781	1777	1801
Q Serve(g_s), s	0.1	0.0	1.9	1.8	0.0	2.2	3.1	8.0	8.0	0.7	4.8	4.9
Cycle Q Clear(g_c), s	0.1	0.0	1.9	1.8	0.0	2.2	3.1	8.0	8.0	0.7	4.8	4.9
Prop In Lane	1.00		0.80	1.00		0.20	1.00		0.52	1.00		0.22
Lane Grp Cap(c), veh/h	136	0	125	191	0	194	178	602	580	66	491	497
V/C Ratio(X)	0.05	0.00	0.63	0.43	0.00	0.53	0.78	0.67	0.67	0.48	0.51	0.51
Avail Cap(c_a), veh/h	784	0	720	784	0	796	327	908	875	222	804	815
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	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	17.5	0.0	18.3	17.1	0.0	17.3	17.9	11.6	11.6	19.3	12.5	12.5
Incr Delay (d2), s/veh	0.2	0.0	5.2	1.5	0.0	2.2	7.0	1.3	1.4	5.3	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(50%),veh/ln	0.1	0.0	0.8	0.7	0.0	0.9	1.4	2.6	2.6	0.4	1.7	1.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	17.7	0.0	23.5	18.6	0.0	19.5	25.0	12.9	13.0	24.6	13.3	13.3
LnGrp LOS	B	A	C	B	A	B	C	B	B	C	B	B
Approach Vol, veh/h		86			184			934			538	
Approach Delay, s/veh		23.1			19.1			14.7			14.0	
Approach LOS		C			B			B			B	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.0	18.4		7.6	8.6	15.8		8.9				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.1	20.9		18.0	7.5	18.5		18.0				
Max Q Clear Time (g_c+I1), s	2.7	10.0		3.9	5.1	6.9		4.2				
Green Ext Time (p_c), s	0.0	3.8		0.3	0.1	2.4		0.6				

Intersection Summary			
HCM 6th Ctrl Delay		15.4	
HCM 6th LOS		B	

Notes

User approved volume balancing among the lanes for turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	60	0	38	0	506	86	33	274	0
Future Volume (veh/h)	0	0	0	60	0	38	0	506	86	33	274	0
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
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	0	0	0	53	17	41	0	550	93	36	298	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	7	7	0	187	51	123	7	1057	178	78	1987	0
Arrive On Green	0.00	0.00	0.00	0.10	0.10	0.10	0.00	0.35	0.35	0.04	0.56	0.00
Sat Flow, veh/h	1781	1870	0	1781	486	1173	1781	3042	513	1781	3647	0
Grp Volume(v), veh/h	0	0	0	53	0	58	0	320	323	36	298	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	0	1659	1781	1777	1778	1781	1777	0
Q Serve(g_s), s	0.0	0.0	0.0	0.7	0.0	0.9	0.0	3.8	3.9	0.5	1.1	0.0
Cycle Q Clear(g_c), s	0.0	0.0	0.0	0.7	0.0	0.9	0.0	3.8	3.9	0.5	1.1	0.0
Prop In Lane	1.00		0.00	1.00		0.71	1.00		0.29	1.00		0.00
Lane Grp Cap(c), veh/h	7	7	0	187	0	174	7	617	618	78	1987	0
V/C Ratio(X)	0.00	0.00	0.00	0.28	0.00	0.33	0.00	0.52	0.52	0.46	0.15	0.00
Avail Cap(c_a), veh/h	1196	1256	0	1203	0	1121	332	1326	1327	392	2771	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	0.0	0.0	11.1	0.0	11.1	0.0	7.0	7.0	12.5	2.8	0.0
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.8	0.0	1.1	0.0	0.7	0.7	4.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	0.0	0.2	0.0	0.3	0.0	0.9	0.9	0.2	0.1	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	0.0	0.0	11.9	0.0	12.2	0.0	7.6	7.7	16.7	2.9	0.0
LnGrp LOS	A	A	A	B	A	B	A	A	A	B	A	A
Approach Vol, veh/h		0			111			643			334	
Approach Delay, s/veh		0.0			12.1			7.6			4.4	
Approach LOS					B			A			A	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.7	13.8		0.0	0.0	19.5		7.3				
Change Period (Y+Rc), s	4.5	4.5		4.5	4.5	4.5		4.5				
Max Green Setting (Gmax), s	5.9	20.0		18.0	5.0	20.9		18.1				
Max Q Clear Time (g_c+I1), s	2.5	5.9		0.0	0.0	3.1		2.9				
Green Ext Time (p_c), s	0.0	3.4		0.0	0.0	1.7		0.3				

Intersection Summary			
HCM 6th Ctrl Delay		7.1	
HCM 6th LOS		A	

Notes

User approved volume balancing among the lanes for turning movement.

Appendix G: Campus Park TIA

Campus Park (TM 5338 & GPA 03-004)
San Diego County (Fallbrook)
August 11, 2008
Revised February 19, 2009

Traffic Impact Study

Prepared for:

County of San Diego
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Job #727

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Glossary of Terms and Acronyms

ADT	Average Daily Traffic
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CMP	Congestion Management Program
DPW	Department of Public Works
EB	Eastbound
GP2020	General Plan 2020
HCM	Highway Capacity Manual
ITE	Institute of Traffic Engineers
LOS	Level of Service
MPH	Miles per Hour
MUTCD	Manual on Uniform Traffic Control Devices
NB	Northbound
PFE	Public Facilities Element
RAS	Regional Arterial System
SANDAG	San Diego Association of Governments
SB	Southbound
TIS	Traffic Impact Study(1)
V/C	Volume to Capacity Ratio
WB	Westbound

Notes: (1) a traffic study can be referred to as a Traffic Impact Study or a Traffic Impact Analysis. A TIS designation is used throughout this report because the County of San Diego Guidelines for Determining Significance references TIS for traffic studies.

Executive Summary
Campus Park (TM 5338 & GPA 03-004)

The Campus Park Project is a mixed use development with 521 single-family dwelling units, 555 multi-family units, a town center with 61,200 square feet of commercial uses, 157,000 square feet of office space and a neighborhood park with a sports complex. The site consists of 416.1 gross acres and is located just north of SR-76 and approximately 0.25 miles east of Interstate 15 in the Fallbrook Community Planning area of San Diego County, California. The project site is generally vacant.

The project trip generation was calculated using SANDAG trip rates from the *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002. The project is calculated to generate 19,941 ADT, 1,423 AM peak hour trips, and 2,095 PM peak hour trips.

Project trips were distributed based on a SANDAG Series 11 traffic model. The SANDAG traffic model documented a 33% internal capture rate; however, at the request of Caltrans and to be conservative, the 33% was rounded down to 30%. The internal capture rate reflects the percentage of vehicles that would stay within the Traffic Analysis Zones (TAZs) located northeast of I-15 and SR-76 (Pala Road). These combined land uses create the equivalent of a small town where residents have retail, office, commercial, schools, and social attractions all within a short drive, a reasonable walking distance, or a short bike ride.

Cumulative projects were accounted for through a general plan summary approach where SANDAG provided a Series 10 Year 2030 model that included all cumulative projects that are consistent with the current land use plan, all non-consistent cumulative projects that will require a variance such as a General Plan Amendment, and all Casino projects that have been submitted to the County. This cumulative traffic model approach is currently being utilized by the County for the GP Update. In addition to the aforementioned approach, ninety five (95) nearby cumulative projects were reviewed in detail.. Roadway improvements already under construction (widening of SR-76 from 2 to 4 lanes by the Granite Construction Company) or roadway improvements needed to achieve access to the project (Horse Ranch Creek Road, Pala Mesa Drive, Pankey Place and all associated internal intersections) were incorporated into the analysis. Other roadway improvements are planned by the Pala Tribe and Caltrans; however, these improvements were not incorporated into the analysis. The other significant cumulative projects include (with cumulative project reference):

1) Meadowood (#1)
2) Campus Park West (#2)
3) Pala Mesa Resort (#11)
4) Palomar College (#26)
5) Warner Ranch (#45)
6) Pauma Tribe (#46)
7) Pala Shopping Center (#90)
8) Gregory Landfill (#95)

The reader should note that this is a conservative (i.e., assessed impacts are greater) cumulative analysis in that it includes all of the traffic projected as resulting from cumulative projects but does not assume the mitigation proposed by these other projects. In other words, the analysis is conservative because existing, rather than projected improved roadway conditions, provide the basis for analysis. (The reader should also note that applications submitted to the County, and included within projected cumulative conditions, frequently assume higher densities [with higher associated traffic generation] than what is ultimately allowed following project approval. This also contributes to the conservative nature of the analysis.)

The horizon year (2030) analysis is based on roadway conditions per the adopted County Circulation Element. All of the roadways with cumulative impacts are calculated to operate at acceptable levels of service with the roadway conditions identified under horizon year (2030) conditions with the exception of Pankey Road south of SR-76; however, this segment is calculated to operate at acceptable levels of service with implementation of a TIF proposed mitigation measure.

The project is calculated to have direct impacts at two intersections and along four contiguous state route segments (six individual segments) that are mitigated to below a level of significance with implementation of the recommended mitigation measures. SR-76 from I-15 easterly a distance of approximately 1.4 miles is currently being widened from 2 to 4 lanes. Because this improvement is underway, the final 4 lane scenario was incorporated into the analysis. The project applicant understands that the portion of SR-76 being widened by Granite will be required to be completed to be considered as mitigated by the Campus Park project. The project will not come on-line without either SR-76 east of I-15 being widened by Granite or some other mitigation measure being implemented.

The cumulative impacts can be mitigated through participation in the County of San Diego 2008 TIF Program Update. Furthermore, the project applicant proposes to construct new roadways and intersections to provide access to and through the project site. A summary of direct and cumulative impacts is shown in **Table E-1**.

TABLE E-1: IMPACT SUMMARY TABLE

Facility	Direct Impact Locations	Cumulative Impact Locations
Intersections	1) SR-76/I-15 NB Ramp (#7) 2) Old Hwy 395/Reche Road (#15)	1) SR-76/Melrose Dr 2) SR-76/E Vista Way 3) SR-76/North River Rd 4) SR-76/Olive Hill Rd 5) SR-76/S Mission Rd 6) SR-76/Via Monserate 7) SR-76/Gird Rd 8) SR-76/Sage Road 9) SR-76/Old Hwy 395 10) SR-76/I-15 SB Ramp 11) SR-76/I-15 NB Ramp 12) SR-76/Pankey Road 13) SR-76/Rice Canyon Road 14) SR-76/Couser Canyon Road 15) Mission Rd at Old Hwy 395 16) Mission Road at I-15 SB Ramp 17) Mission Road at I-15 NB Ramp 18) Old Hwy 395/Reche Rd 19) Old Hwy 395/Stewart Canyon Rd 20) Old Hwy 395/Pala Mesa Dr 21) Old Hwy 395/Dulin Rd 22) Reche Rd/Live Oak Park Rd
Segments and State Routes	1) SR-76 (S Mission Rd to Gird Rd) 2) SR-76 (Sage Rd to Old Hwy 395) 3) SR-76 (I-15 SB Ramp to I-15 NB Ramp) 4) SR-76 (Horse Ranch Creek Rd to Couser Canyon Rd)	1) Old Hwy 395 from E Mission Rd to W Lilac Rd 2) Reche Rd from Green Canyon Norte to Gird Rd 3) Pankey Rd from SR-76 to Shearer Crossing 4) Pala Mesa Dr from Wilt Rd/Sage Rd to Old Hwy 395 5) SR-76 Melrose Dr to Old Hwy 395 6) SR-76 from I-15 SB Ramp to I-15 NB Ramp 7) SR-76 from Horse Ranch Creek Rd to Pala Mission Rd
Freeways	None	None
Ramps	None	None
Driveway Spacing	Applicant to submit a copy of the Modification to Road Standard Request under separate cover	Applicant to submit a copy of the Modification to Road Standard Request under separate cover

1.0 Introduction

This report describes the existing roadway network in the vicinity of the project site and includes a review of the existing and proposed activities for weekday peak AM and PM periods, and daily traffic conditions when the project is completed. The format of this study includes the following chapters:

1.0 Introduction
2.0 Existing Conditions
3.0 Project Impact Analysis
4.0 Impact Summary
5.0 Summary of Project Impacts & Mitigation
6.0 References
7.0 List of Preparers and Persons and Organizations Contacted

1.1 Purpose of the Report

The purpose of this traffic impact study is to determine and analyze potential traffic impacts for the proposed project. This report is a technical CEQA document to the Campus Park EIR.

1.2 Project Location and Description

The project is located on the northeast corner of I-15/SR-76 in the Fallbrook/Pala area of San Diego County, California. The location of the project is shown in **Figure 1.**

The project is planned with 521 single-family dwelling units, 555 multi-family units, a town center with 61,200 square feet of commercial uses, 157,000 square feet of office space and neighborhood park including a sports complex. The site consists of 416.1 gross acres. The project site is generally vacant. A preliminary site plan is shown in **Figure 2**. The map of the Traffic Impact Study (TIS) area is shown in **Figure 3.**

1.3 Summary of Significance Criteria

This section describes traffic impact significance criteria, which is based on the County of San Diego *Guidelines for Determining Significance and Report Format & Content Requirements Transportation and Traffic*, December 5, 2007, the County of San Diego General Plan Public Facilities Element (Part XII), and the San Diego Association of Governments Congestion Management Program.

Figure 1: Project Location

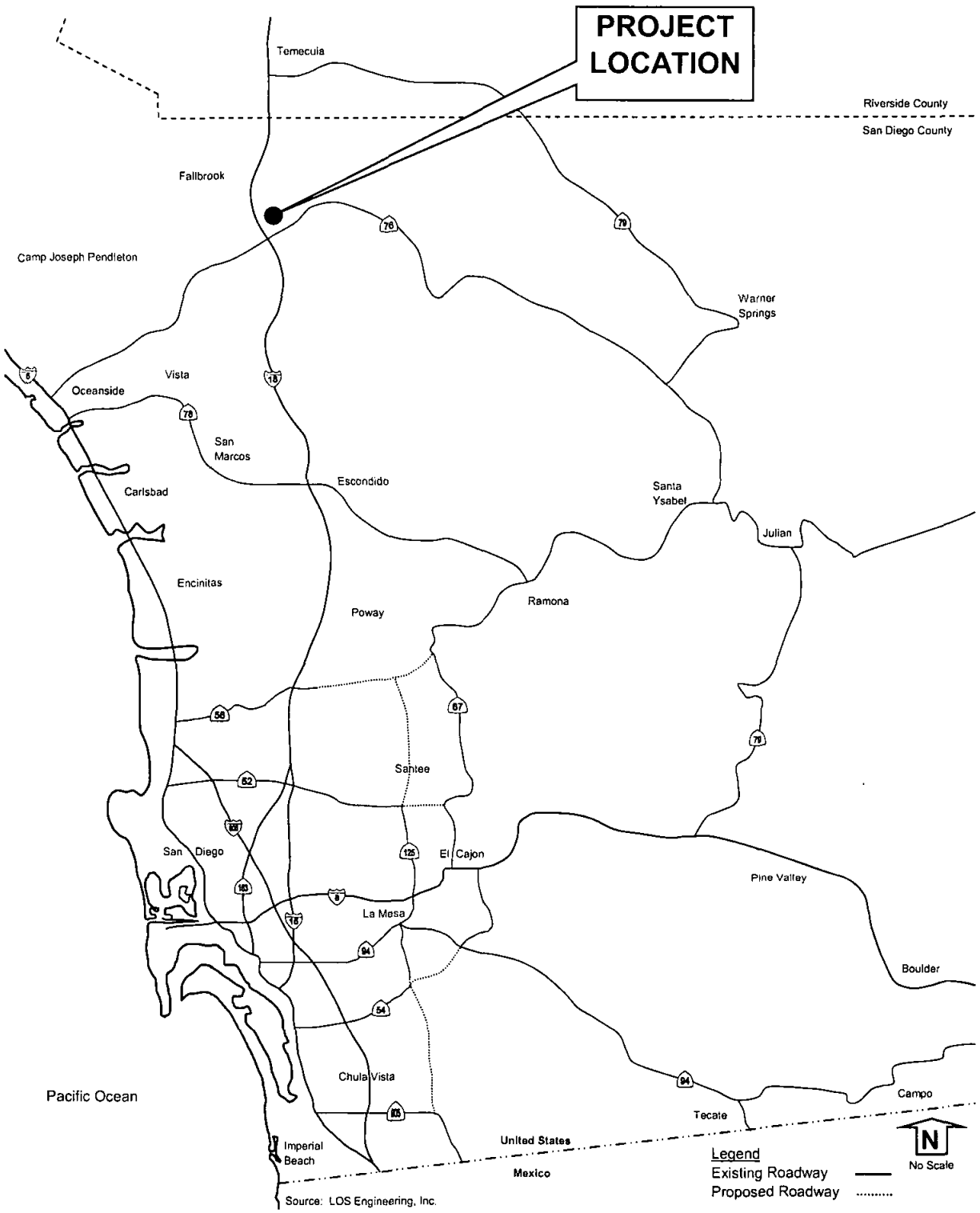
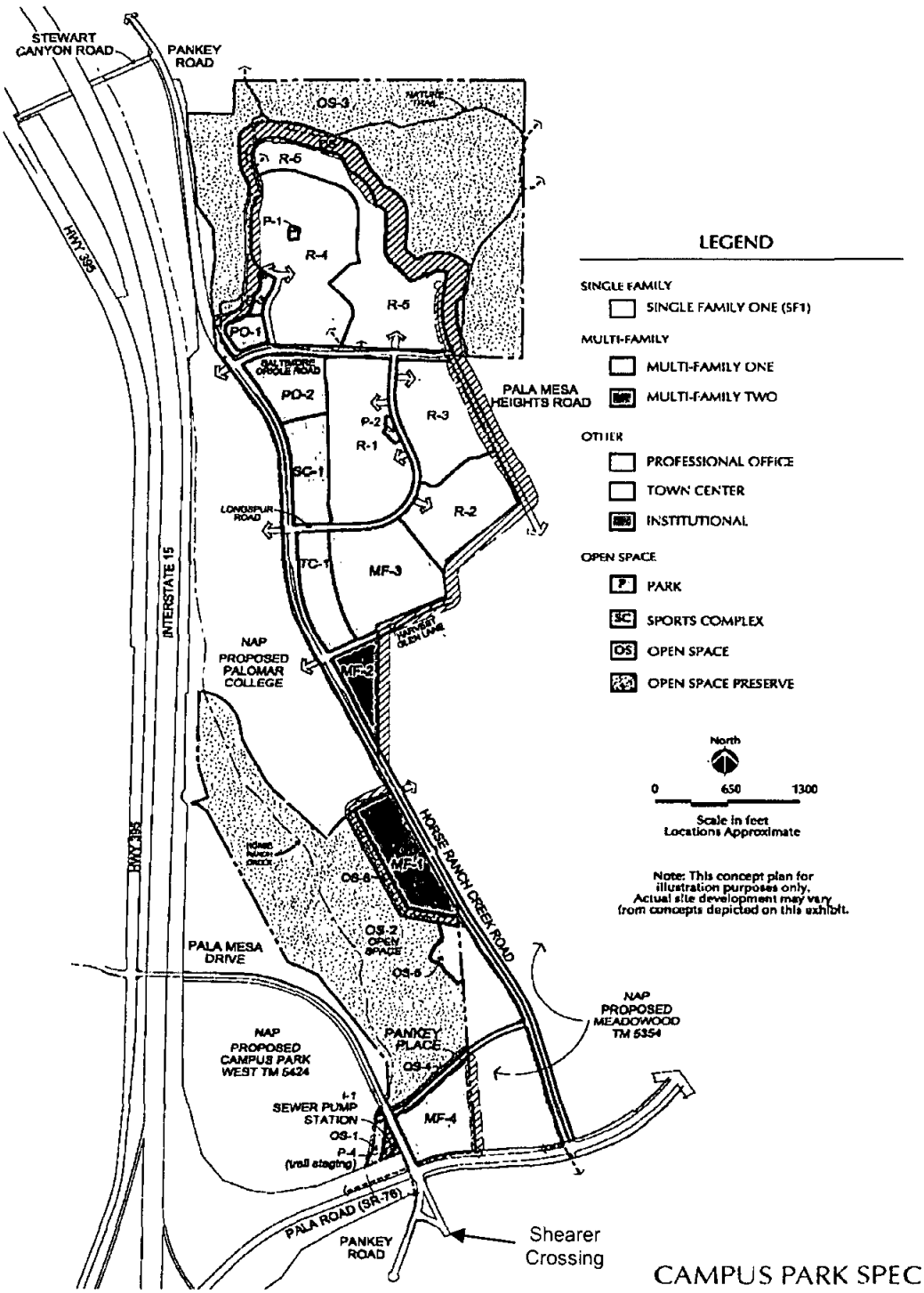
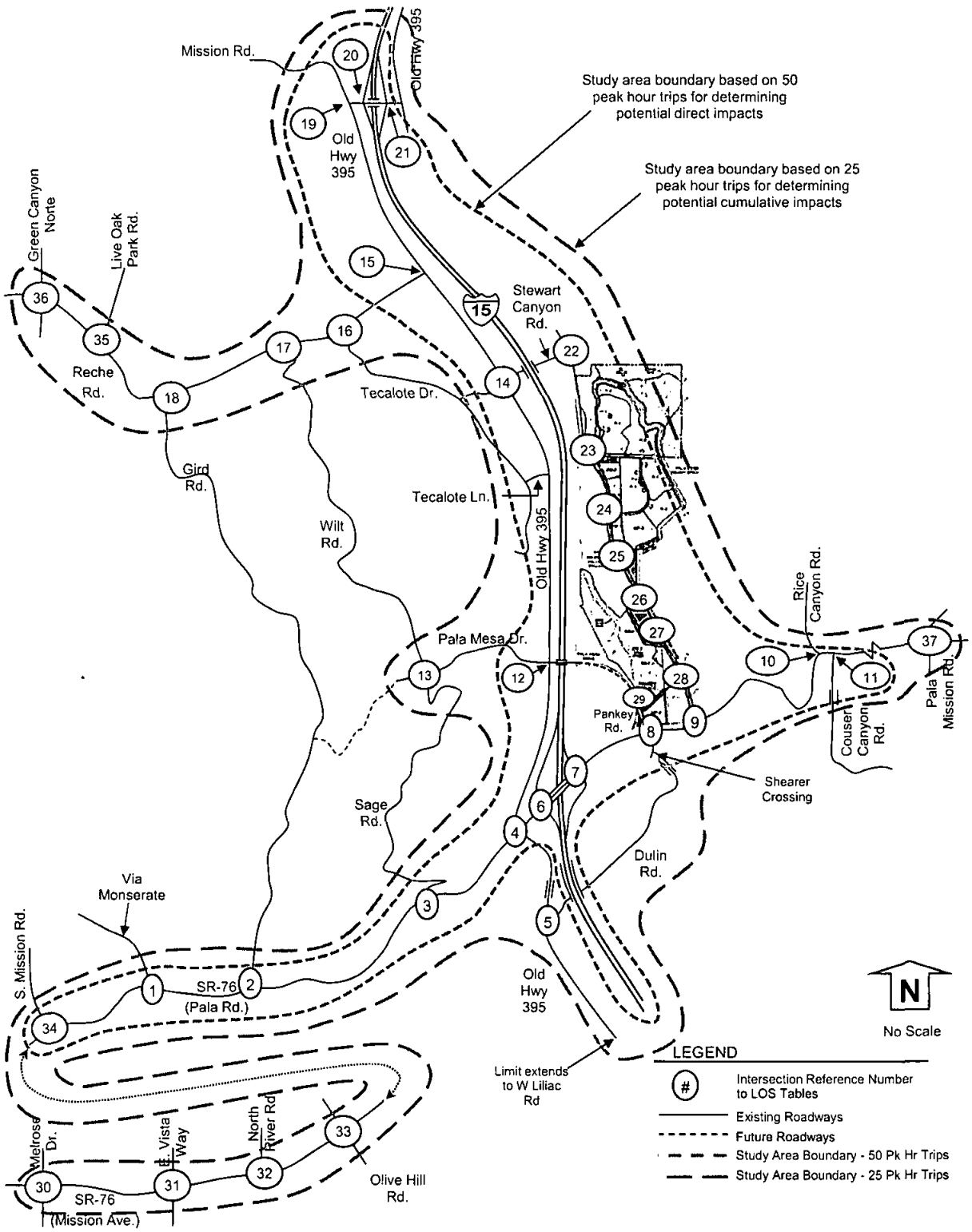


Figure 2: Site Plan



Source: Passerelle

Figure 3: TIS Study Area



1.3.1 County of San Diego Guidelines for Determining Significance

Based on the County of San Diego *Guidelines for Determining Significance and Report Format & Content Requirements Transportation and Traffic*, December 5, 2007, a project may have a direct and/or cumulative impact if the significance criteria are exceeded, as shown in **Table 1**.

TABLE 1: COUNTY OF SAN DIEGO SIGNIFICANT TRAFFIC IMPACT THRESHOLDS

Measures of Significant Project Impacts to Congestion Allowable Increases on Congested Roads and Intersections					
	Road Segments			Intersections	
Operations	2-Lane Road	4-Lane Road	6-Lane Road	Signalized	Un-signalized
LOS E	200 ADT	400 ADT	600 ADT	Delay of 2 seconds	20 peak hour trips on a critical movement
LOS F	100 ADT	200 ADT	300 ADT	Delay of 1 second, or 5 peak hour trips on a critical movement	5 peak hour trips on a critical movement

Source: County of San Diego *Guidelines for Determining Significance* Tables 1 & 2. Note: A critical movement is one that is experiencing excessive queues. By adding proposed project trips from a list of projects, these same tables are used to determine if total cumulative impacts are significant. If cumulative impacts are found to be significant, each project that contributes any trips must mitigate it's share of the cumulative impacts. The County may also determine impacts have occurred on roads even when a project's traffic or cumulative impacts do not trigger an unacceptable level of service, when such traffic uses a significant amount of remaining road capacity. On-site roadways are required to be at LOS C or better.

A direct impact would occur when the significance criteria are exceeded. If the proposed project exceeds the values provided in the above table, then the individually proposed project would result in a direct traffic impact. Specific improvements to mitigate direct impacts must be identified.

A cumulative impact would occur when two conditions are met: 1) build-out of all near-term projects results in a cumulative traffic impact and 2) the amount of traffic generated by the individual proposed project contributes (even in a small part) to that cumulative impact. Both conditions must be met for an individual project to result in a cumulative traffic impact. If the traffic generated from all the near-term projects (cumulative projects) would result in a cumulative traffic impact then condition one is met. If the total amount of traffic generated exceeds the values provided in the above table, then condition one is met and the individually proposed project would result in a cumulative traffic impact. Fair-share contributions toward cumulative impacts may only be provided when a specific transportation improvement project is identified and the schedule for completion of the improvement project has been identified.

Potential mitigation measures may include traffic signal improvements, physical road improvements, street re-striping and parking prohibitions, fair-share contributions, and transportation demand management programs.

1.3.2 County of San Diego General Plan Public Facilities Element (Part XII)

The County of San Diego *Guidelines for Determining Significance and Report Format and Content Requirements Transportation and Traffic* dated December 5, 2007 includes a summary of the Public Facilities Element of the San Diego County General Plan as follows:

"The County of San Diego General Plan Public Facilities Element establishes policies

and implementation measures regarding the assessment and mitigation of traffic impacts of new development. One of the goals of the Public Facilities Element (PFE) is to provide "A safe, convenient, and economical integrated transportation system including a wide range of transportation modes (PFE, page XII-4-18)." The PFE also identifies an objective in the Transportation Section to provide a "Level of Service C or better on County Circulation Element roads (PFE, page XII-4-18)." The PFE, however, establishes LOS D as an off-site mitigation threshold for discretionary projects. When an existing Level of Service is already D, "a LOS of D may be allowed (PFE, page XII-4-18)." According to the PFE, projects that significantly increase congestion on roads operating at LOS E or LOS F must provide mitigation. According to the PFE, this mitigation can consist of a fair-share contribution to an established program or project to mitigate the project's impacts. If impacts cannot be mitigated, the project will be denied unless a specific statement of overriding findings is made pursuant to Sections 15091 and 15093 of the State CEQA Guidelines to approve the project as proposed."

The County of San Diego significance criteria is consistent with the aforementioned summary of PFE Policy 1.1, which requires mitigation for projects that significantly increase congestion on roads operating at LOS E or LOS F.

PFE Policy 1.2 states "General Plan Amendments and Rezones shall be reviewed to ensure that any proposed increases in density or intensity of use will not prevent the planned Circulation Element road system from operating at its planned Level of Service at build out." The project applicant proposes a General Plan Amendment.

In summary, the County of San Diego traffic impact significance criteria covers the significance criteria identified in PFE policies 1.1 and 1.2.

1.3.3 SANDAG Congestion Management Program Criteria

The San Diego Association of Governments (SANDAG) Congestion Management Program (CMP) is intended to determine if a large project (greater than 2,400 ADT or more than 200 peak hour trips) will adversely impact the CMP transportation system. A CMP analysis is included because this project is calculated to generate more than 2,400 ADT and more than 200 peak hour trips. A CMP analysis is required on the Regional Arterial System (RAS), which includes the following in the vicinity of the project site:

1) I-15,
2) SR-76, and
3) Old Highway 395.

All of the above have been included in the analysis. A copy of CMP RAS listing is included in **Appendix A**.

Based on the County of San Diego *Guidelines for Determining Significance and Report Format & Content Requirements Transportation and Traffic*, December 5, 2007, the CMP significance criteria are shown in **Table 2**.

TABLE 2: SANDAG CMP SIGNIFICANT TRAFFIC IMPACT THRESHOLDS

Level of Service with Project	Allowable Increase Due to Project Impacts					
	Freeways		Roadway Segments		Intersections	Ramps with> 15 min Delay
	V/C	Speed (mph)	V/C	Speed (mph)	Delay (sec.)	Delay (min.)
E & F	0.01	1	0.02	1	2	2

Source: County of San Diego *Guidelines for Determining Significance* Table 5. V/C = Volume to capacity ratio. Speed measured in miles per hour. Delay = Average stopped delay per vehicle measured in seconds, or minutes. LOS: Level of Service. ADT = Average Daily Trips.

With regard to freeways as referenced in Table 2, the lead agency typically refers to Caltrans for determination of impacts and potential mitigation measures. The following section describes Caltrans' criteria.

1.3.4 CALTRANS' Criteria

Caltrans' *Guide for the Preparation of Traffic Impact Studies,* December 2002, outlines recommended procedures for traffic study contents but does not identify specific traffic impact thresholds. Caltrans staff has indicated that there is a desire to maintain freeway operations between LOS C and D levels.

Specific traffic impact thresholds are typically identified by local Caltrans staff. For the San Diego region, Caltrans' staff has previously indicated that an impact to a freeway is generally identified when project traffic causes the operations to drop one letter grade (i.e. from LOS E to LOS F).

2.0 Existing Conditions

This section describes the existing study area street system: existing peak hour intersection volumes with Level of Service (LOS), existing daily roadway volumes with LOS, and existing parking, transit and on-site circulation conditions.

2.1 Existing Transportation Conditions

In the vicinity of the project, only the roadways where the project would add 25 or more peak hour trips were analyzed as part of this study, which included:

I-15 in the vicinity of the project is classified as a *Freeway* on the September 2005 San Diego County Circulation Element map. A copy of the September 2005 San Diego County Circulation Element Map showing the study area roadways is included in **Appendix B**. I-15 from Rainbow Valley Boulevard to Escondido Highway (Old Highway 395) is constructed as an eight lane freeway with a center divider. The travel lanes are generally 12 feet in width and the shoulders are generally 10 to 12 feet in width. The posted speed limit is 70 MPH along I-15 in the vicinity of the project.

SR-76 from Melrose Drive to S. Mission Road is classified as a *Expressway;* from S. Mission Road to I-15, SR-76 is classified as a *Prime Arterial with bike lanes* and from I-15 to Pala Mission Road, SR-76 is classified as a *Major Road with bike lanes* on the September 2005 San Diego County Circulation Element map. SR-76 from Melrose Drive to S. Mission Road is generally constructed as a two-lane un-divided roadway (one travel lane of approximately 12 feet in each direction) with shoulder widths ranging from one to five feet (total pavement width ranges from approximately 26 feet to approximately 34 feet). SR-76 from S. Mission Road to Old Highway 395 is generally constructed as a two-lane un-divided roadway (one travel lane of approximately 12 feet in each direction) with shoulder widths ranging from two to eight feet (total pavement width ranges from approximately 28 feet to approximately 40 feet). From Old Highway 395 to I-15 southbound ramps, SR-76 is constructed within approximately 76 feet of pavement with a center two way left turn lane of approximately 12 feet, two travel lanes in each direction for approximately 24 feet, and a paved shoulder in each direction of approximately eight feet. From I-15 southbound ramps to I-15 northbound ramps, SR-76 is constructed within approximately 56 feet of pavement with one travel lane of approximately 13 feet in each direction, a back to back left turn lane of approximately 14 feet, and a shoulder of approximately eight feet for each travel direction. From I-15 northbound ramps to Pala Mission Road, SR-76 is constructed within approximately 28 feet with one travel lane of approximately 12 feet in each direction and a shoulder of approximately two feet in each direction. Speed limit signs of 55 MPH were observed on the segments between Melrose Drive and North River Road. Additionally, several horizontal alignment signs from the Manual on Uniform Traffic Control Devices (MUTCD) are posted along SR-76. The 85th percentile speeds are summarized at the end of this section.

Dulin Road from Old Highway 395 to Shearer Crossing is classified as a *Light Collector* on the September 2005 San Diego County Circulation Element map. The northern portion of Dulin Road

becomes Shearer Crossing and is also classified as a *Light Collector* on the September 2005 San Diego County Circulation Element map. Dulin Road/Shearer Crossing from Old Highway 395 to Pankey Road is generally constructed as a two lane un-divided roadway (one travel lane of approximately 12 feet in each direction) within approximately 40 feet of pavement. A short portion of Dulin Road just east of Old Highway 395 is constructed with four lanes (2 lanes in each direction). Dulin Road, in general, has one travel lane of approximately 12 feet in each direction along with a parking lane of approximately eight feet on each side of the roadway within the residential community of Lake Rancho Viejo. The posted speed limit is 25 MPH. The 85th percentile speeds are summarized at the end of this section.

Horse Ranch Creek Road is a proposed roadway that will connect to the existing portion of Pankey Road that exists south of Stewart Canyon Road to SR-76 along a new alignment. The applicant proposes to construct Horse Ranch Creek Road per GP Update Circulation Element "Boulevard" standards and has submitted a request for a modification to a road standard under separate cover. The proposed Horse Ranch Creek Road will replace the existing Pankey Road that is classified as a *Light Collector* on the September 2005 San Diego County Circulation Element map. The project applicant will be responsible for constructing this segment of Horse Ranch Creek Road before obtaining occupancy permits.

Old Highway 395 from Mission Road to Dulin Road is classified as a *Collector with bike lanes* and from Dulin Road to W. Lilac Road is classified as a *Rural Collector with bike lanes* on the September 2005 San Diego County Circulation Element map. From Mission Road to Dulin Road, Old Highway 395 is generally constructed as a two-lane un-divided roadway (one travel lane of approximately 12 feet in each direction) with shoulder widths ranging from two to eight feet (total pavement width ranges from approximately 28 feet to approximately 40 feet). The posted speed limit on Old Highway 395 from Mission Road to SR-76 is 55 MPH. Between Dulin Road and W. Lilac Road, Old Highway 395 is generally constructed as a two-lane un-divided roadway (one travel lane of approximately 12 feet in each direction) with shoulder widths ranging from two to six feet (total pavement width ranges from approximately 28 feet to approximately 36 feet). A posted speed limit was not observed on this segment of Old Highway 395 south of Dulin Road. The 85th percentile speeds are summarized at the end of this section.

Pankey Road from Stewart Canyon Road to Dulin Road is classified as a *Light Collector* on the September 2005 San Diego County Circulation Element map. From Stewart Canyon Road to a terminus cul-de-sac approximately 0.7 miles to the south, Pankey Road is constructed with approximately 32 feet of pavement with a northbound travel lane of approximately 20 feet and southbound travel lane of approximately 12 feet. From SR-76 north to an existing bridge over Horse Ranch Creek, Panky Road is within approximately 40 feet of pavement (including over the bridge) and one travel lane in each direction (no posted speed limits were observed). From SR-76 south to Shearer Crossing (connects to Dulin Road), Panky Road is constructed with approximately 40 feet of pavement and one travel lane in each direction. No posted speed limits were observed. The 85th percentile speeds are summarized at the end of this section.

Pala Mesa Drive from Sage Rd/Wilt Rd to Pankey Road is classified as a *Light Collector* on the September 2005 San Diego County Circulation Element map. Pala Mesa Drive between Sage Rd/Wilt Rd and Old Hwy 395 is generally constructed within approximately 24 feet of pavement with one travel lane in each direction; however, some portions closer to Wilt Rd/Sage Rd narrow to

approximately 19 feet of pavement. A posted speed limit was not observed on this segment. The 85th percentile speeds are summarized at the end of this section. Pala Mesa Drive east of Old Highway 395 only exists as a bridge over I-15 that is closed to traffic. From Old Highway 395 to Pankey Road, the Pala Mesa Drive alignment is proposed to be changed. The new alignment is shown throughout the various figures located within this report and will be a 2 lane roadway designed per County Standards to the satisfaction of the Department of Public Works (DPW). The project applicant will be responsible for constructing this segment of Pala Mesa Drive before obtaining occupancy permits.

Reche Road from Green Canyon Road/Green Canyon Norte to Gird Road is classified as a *Rural Collector* and from Gird Road to Old Highway 395 is classified as a *Rural Collector with Bike Lanes* on the September 2005 San Diego County Circulation Element map. Reche Road from Green Canyon Road/Green Canyon Norte to Old Highway 395 is generally constructed as a two-lane un-divided roadway (one travel lane of approximately 12 feet in each direction) within approximately 26 to 28 feet of pavement. The posted speed limit is 45 MPH. The 85th percentile speeds are summarized at the end of this section.

Pankey Place (aka Street R) is a proposed roadway that will connect the new Pala Mesa Drive extension (from the existing Pala Mesa Drive bridge over I-15 down to SR-76) to the new Horse Ranch Creek Road. Street R is proposed as a two lane roadway to be designed per County Standards to the satisfaction of the DPW. The project applicant will be responsible for constructing this segment of Street R (aka Pankey Place) before obtaining occupancy permits.

Stewart Canyon Road from Old Highway 395 to Pankey Road is classified as a *Rural Collector* on the September 2005 San Diego County Circulation Element map. Stewart Canyon Road from Old Highway 395 to Pankey Road is generally constructed as a two-lane un-divided roadway within approximately 40 feet of pavement. A posted speed limit was not observed on this segment. The 85th percentile speeds are summarized at the end of this section.

The existing roadway conditions are shown in **Figures 4a and 4b**. The 85th percentile speeds for the aforementioned roadways are summarized in **Table 3** with data included in **Appendix C.**

Figure 4a: Existing Roadway Conditions

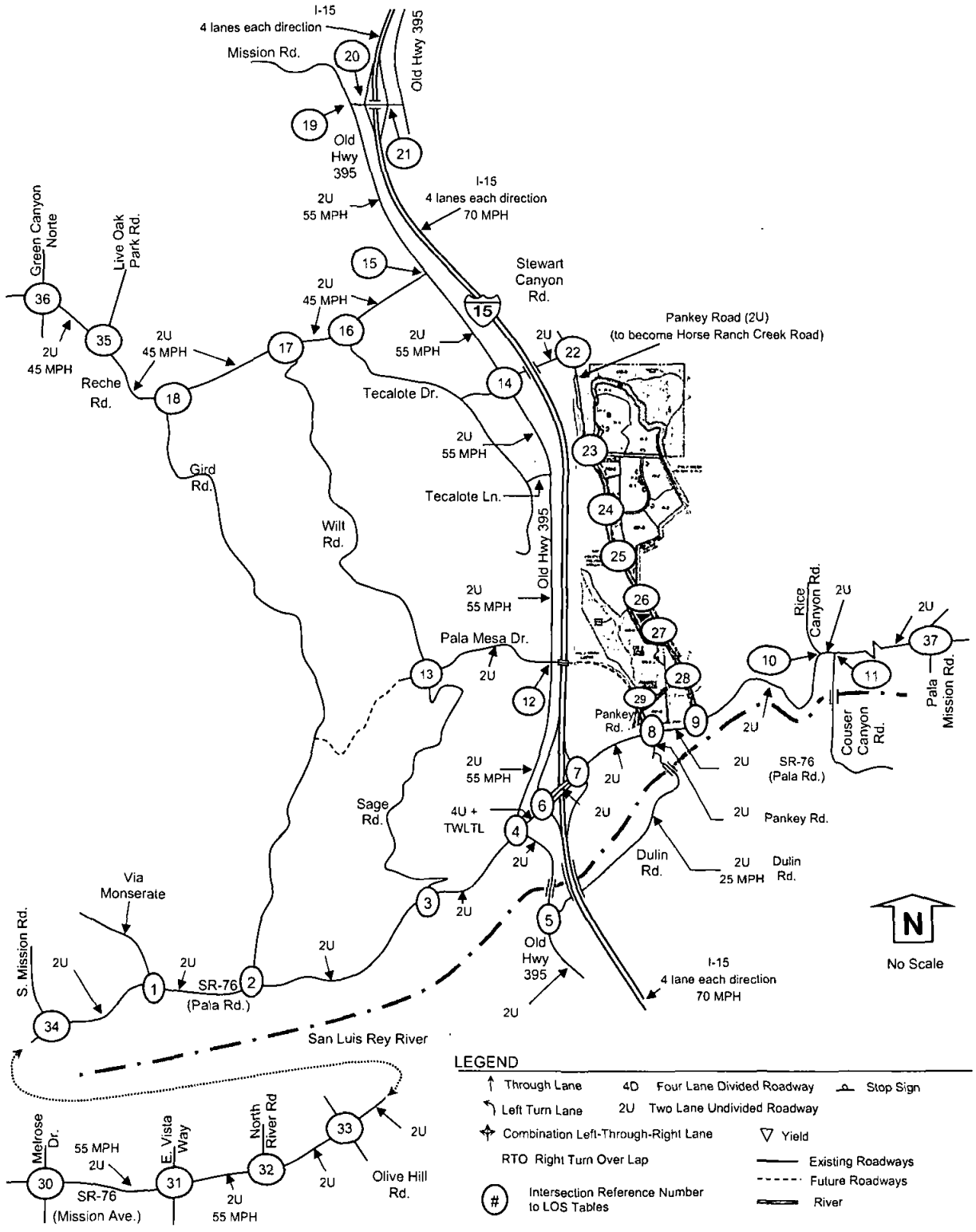


Figure 4b: Existing Roadway Conditions

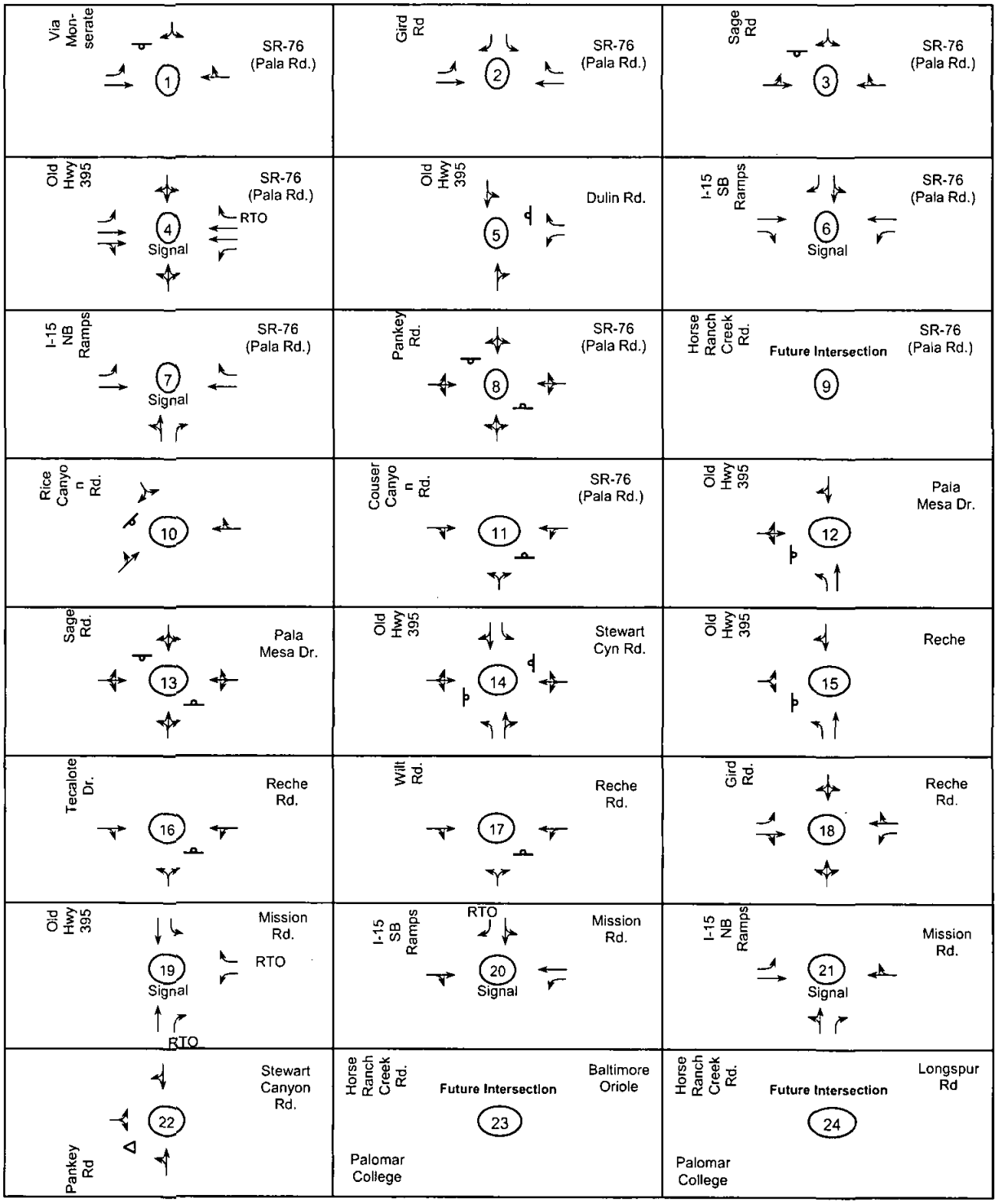


Figure 4c: Existing Roadway Conditions

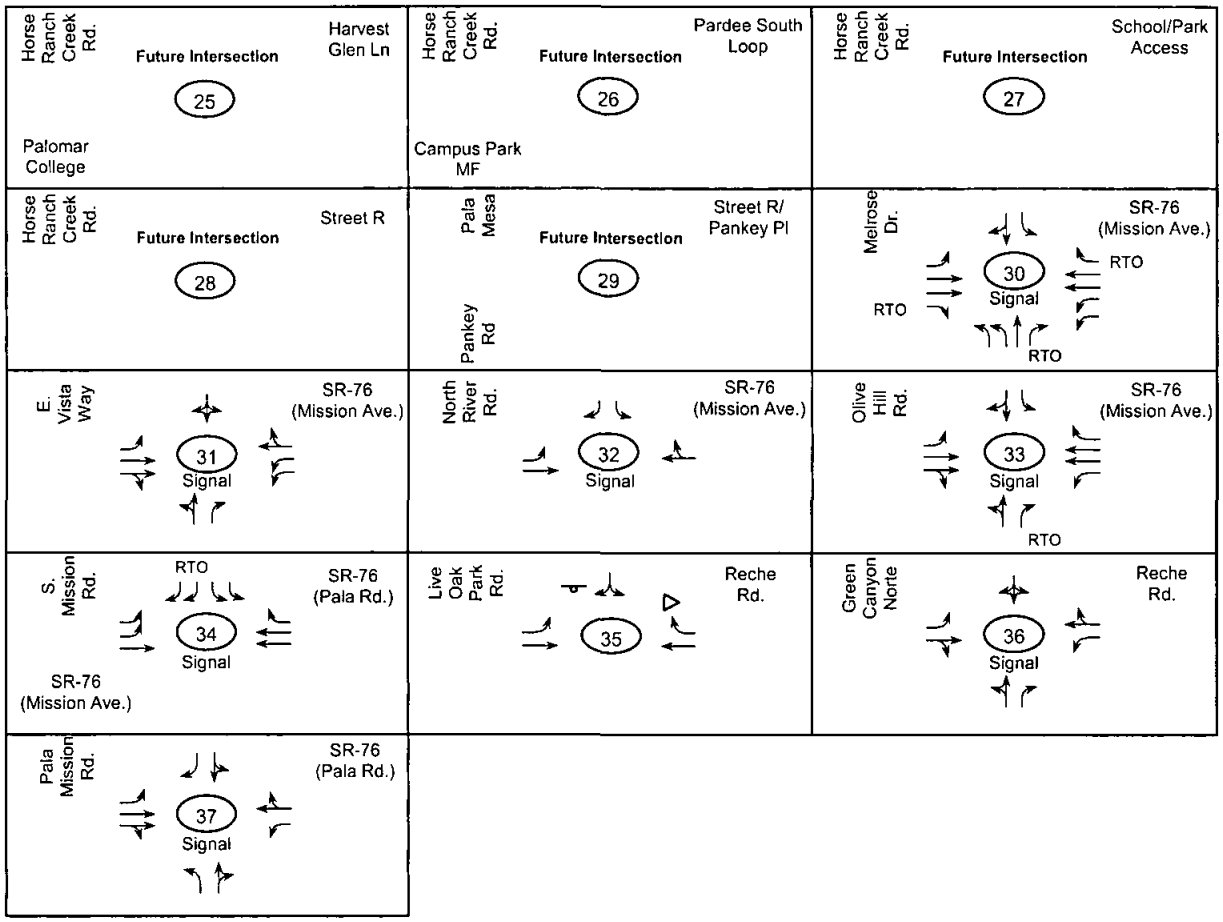


TABLE 3: STUDY AREA ROADWAY SPEEDS – 85TH PERCENTILE

Segment	85th Percentile Speed (MPH) and Direction	
SR-76		
Melrose Drive to E Vista Way	Eastbound 49 MPH	Westbound 59 MPH
E Vista Way to North River Road	Eastbound 49 MPH	Westbound 51 MPH
North River Road to Olive Hill Road	Eastbound 52 MPH	Westbound 49 MPH
Olive Hill Road to S Mission Road	Eastbound 44 MPH	Westbound 44 MPH
S Mission Road to Via Monerate	Eastbound 49 MPH	Westbound 49 MPH
Via Monserate to Gird Road	Eastbound 50 MPH	Westbound 53 MPH
Gird Road to Sage Road	Eastbound 58 MPH	Westbound 55 MPH
Sage Road to Old Highway 395	Eastbound 53 MPH	Westbound 50 MPH
Old Highway 395 to I-15 SB Ramp	Eastbound 42 MPH	Westbound 41 MPH
I-15 SB Ramp to I-15 NB Ramp	Eastbound 42 MPH	Westbound 36 MPH
I-15 NB Ramp to Pankey Road	Eastbound 65 MPH	Westbound 58 MPH
Pankey Road to Horse Ranch Creek Road	Eastbound 65 MPH	Westbound 58 MPH
Horse Ranch Creek Road to Rice Canyon Road	Eastbound 48 MPH	Westbound 39 MPH
Rice Canyon Road to Couser Canyon Road	Eastbound 44 MPH	Westbound 45 MPH
Couser Canyon Road to Pala Mission Road	Eastbound 51 MPH	Westbound 52 MPH
Dulin Road		
Old Highway 395 to Pankey Road	Eastbound 42 MPH	Westbound 44 MPH
Old Highway 395		
East Mission Road to Reche Road	*Northbound 54 MPH*	*Southbound 57 MPH*
Reche Road to Stewart Canyon Road	Northbound 57 MPH	Southbound 54 MPH
Stewart Canyon Road to Tecalote Lane	Northbound 57 MPH	Southbound 60 MPH
Tecalote Lane to Pala Mesa Drive	Northbound 59 MPH	Southbound 61 MPH
Pala Mesa Drive to SR-76 (Pala Road)	Northbound 54 MPH	Southbound 59 MPH
SR-76 (Pala Road) to Dulin Road	Northbound 59 MPH	Southbound 59 MPH
Dulin Roat to W. Lilac Road	Northbound 63 MPH	Southbound 56 MPH
Reche Road		
Green Canyon Norte to Live Oak Park Road	Eastbound 39 MPH	Westbound 43 MPH
Live Oak Park Road to Gird Road	Eastbound 38 MPH	Westbound 42 MPH
Gird Road to Wilt Road	Eastbound 44 MPH	Westbound 47 MPH
Wilt Road to Tecalote Road	Eastbound 50 MPH	Westbound 49 MPH
Tecalote Drive to Old Highway 395	Eastbound 46 MPH	Westbound 44 MPH
Stewart Canyon Road		
Old Hwy 395 to Horse Ranch Creek Road	Eastbound 43 MPH	Westbound 41 MPH
Pankey Road		
South of Stewart Canyon Road	Northbound 40 MPH	Southbound 38 MPH
SR-76 (Pala Road) to Dulin Road	Northbound 30 MPH	Southbound 30 MPH
Pala Mesa Road		
Wilt Road/Sumac Road to Old Hwy 395	Eastbound 32 MPH	Westbound 35 MPH

MPH: Miles Per Hour

2.1.1 Existing Traffic Volumes and Level of Service

Existing AM and PM peak hour intersection volumes (with count dates) for the following intersections were collected for this study:

1) SR-76 (Pala Rd) / Via Monserate – Thursday (12/18/2008)
2) SR-76 (Pala Rd) / Gird Rd – Thursday (12/18/2008)
3) SR-76 (Pala Rd) / Sage Rd – Thursday (12/18/2008)
4) SR-76 (Pala Rd) / Old Highway 395 – Tuesday (1/6/2009)
5) Old Highway 395 / Dulin Rd - Wednesday (12/5/2007)
6) SR-76 (Pala Rd) / I-15 SB Ramp – Thursday (12/18/2008)
7) SR-76 (Pala Rd) / I-15 NB Ramp – Thursday (12/18/2008)
8) SR-76 (Pala Rd) / Pankey Road – Tuesday (12/4/2007)
9) SR-76 (Pala Rd) / Horse Ranch Creek Rd – Future Intersection

10) SR-76 (Pala Rd) / Rice Canyon Rd – Tuesday (1/6/2009)
11) SR-76 (Pala Rd) / Couser Canyon Rd – Tuesday (1/6/2009)
12) Old Highway 395 / Pala Mesa Dr – Tuesday (1/6/2009)
13) Pala Mesa Dr / Wilt Road / Sage Rd – Tuesday (1/6/2009)
14) Old Highway 395 / Stewart Canyon Rd – Thursday (12/11/2008)
15) Old Highway 395 / Reche Rd – Thursday (12/11/2008)
16) Reche Rd / Tecalote Dr – Thursday (12/11/2008)
17) Reche Rd / Wilt Rd – Thursday (12/11/2008)
18) Reche Rd / Gird Rd – Thursday (12/11/2008)
19) Mission Rd / Old Highway 395 – Thursday (12/11/2007)
20) Mission Rd / I-15 SB Ramp – Thursday (12/18/2008)
21) Mission Rd / I-15 NB Ramp – Thursday (12/18/2008)
22) Stewart Canyon Rd / Pankey Rd – Thursday (12/18/2008)
23) SR-76 (Mission Rd) / Melrose Dr – Thursday (11/13/2008)
24) SR-76 (Mission Rd) / E. Vista Rd – Thursday (11/13/2008)
25) SR-76 (Mission Rd) / North River Rd – Thursday (11/11/2008)
26) SR-76 (Mission Rd) / Olive Hill Rd – Thursday (11/13/2008)
27) SR-76 (Mission Rd) / S. Mission Rd – Thursday (11/13/2008)
28) Reche Rd / Live Oak Park Rd – Tuesday (11/18/2008)
29) Reche Rd / Green Canyon Norte – Tuesday (11/18/2008)
30) SR-76 (Pala Rd) / Pala Mission Rd – Wednesday (11/19/2008)

The following street segment volumes (with count dates) were analyzed as part of this study:

1) SR-76 (Mission Rd) from Melrose Dr to E Vista Way – Tuesday (11/18/2008)
2) SR-76 (Mission Rd) from E Vista Way to North River Rd – Wednesday (11/12/2008)
3) SR-76 (Mission Rd) from North River Rd to Olive Hill Rd – Tuesday (11/11/2008)
4) SR-76 (Mission Rd) from Olive Hill Rd and S Mission Rd – Wednesday (11/12/2008)
5) SR-76 (Pala Rd) from S Mission Rd to Via Monserate – Tuesday (11/18/2008)
6) SR-76 (Pala Rd) from Via Monserate to Gird Road – Tuesday (1/6/2009)
7) SR-76 (Pala Rd) from Gird Road to Sage Road – Tuesday (1/6/2009)
8) SR-76 (Pala Rd) from Sage Road to Old Highway 395 – Tuesday (1/6/2009)
9) SR-76 (Pala Rd) from Old Highway 395 to I-15 SB Ramp – Tuesday (1/6/2009)
10) SR-76 (Pala Rd) from I-15 SB Ramp to I-15 NB Ramp - Tuesday (1/6/2009)
11) SR-76 (Pala Rd) from I-15 NB Ramp to Pankey Road – Tuesday (1/6/2009)
12) SR-76 (Pala Rd) from Pankey Road to Horse Ranch Creek Rd – Tuesday (1/6/2009)
13) SR-76 (Pala Rd) from Horse Ranch Creek Rd to Rice Canyon Rd – Tuesday (1/6/2009)
14) SR-76 (Pala Rd) from Rice Canyon Rd to Couser Canyon Rd – Tuesday (1/6/2009)
15) SR-76 (Pala Rd) from Couser Canyon Rd to Pala Mission Rd – Wednesday (11/12/2008)
16) Dulin Road from Old Highway 395 to Pankey Road – Thursday (12/11/2008)
17) Old Highway 395 from East Mission Road to Reche Road – Tuesday (1/6/2009)
18) Old Highway 395 from Reche Road to Stewart Canyon Road – Tuesday (1/6/2009)
19) Old Highway 395 from Stewart Canyon Road to Tecalote Lane – Thursday (12/11/2008)
20) Old Highway 395 from Tecalote Lane to Pala Mesa Drive – Thursday (12/11/2008)
21) Old Highway 395 from Pala Mesa Drive to SR-76 (Pala Rd) – Thursday (12/11/2008)
22) Old Highway 395 from SR-76 (Pala Rd) to Dulin Road – Thursday (12/11/2008)
23) Old Highway 395 from Dulin Road to W. Lilac Road – Thursday (12/11/2008)

24) Pala Mesa Drive from Wilt Rd/Sage Rd to Old Hwy 395 – Thursday (8/28/2008)
25) Reche Road from Green Canyon Norte to Live Oak Park Rd – Wednesday (11/12/2008)
26) Reche Road from Live Oak Park Rd to Gird Road – Tuesday (1/6/2009)
27) Reche Road from Gird Road to Wilt Road – Tuesday (1/6/2009)
28) Reche Road from Wilt Road to Tecalote Drive – Tuesday (1/6/2009)
29) Reche Road from Tecalote Drive to Old Highway 395 – Tuesday (1/6/2009)
30) Stewart Canyon Road from Old Highway 395 to Pankey Rd – Thursday (12/11/2008)
31) Pankey Road south of Stewart Canyon Rd – Thursday (12/11/2008)
32) Pankey Road from SR-76 (Pala Rd) to Shearer Crossing/Dulin Road – Thursday (12/13/2007)

The following freeway segment volumes (from Caltrans web site documenting year 2007 volumes) were analyzed as part of this study:

1) I-15 from Rainbow Valley Boulevard to Mission Road
2) I-15 from Mission Road to SR-76 (Pala Rd)
3) I-15 from SR-76 (Pala Rd) to Escondido Highway (Old Highway 395)

Additionally, the following State Route segment volumes (from SANDAG Hwy Coverage documenting year 2007 volumes) were analyzed as part of this study:

1) SR-76 from Melrose Drive to E. Vista Way
2) SR-76 from E. Vista Way to North River Road
3) SR-76 from North River Road to Olive Hill Road
4) SR-76 from Olive Hill Road to Mission Road
5) SR-76 from Mission Road to Via Monserate
6) SR-76 from Via Monserate to Gird Road
7) SR-76 from Gird Road to Sage Road
8) SR-76 from Sage Road to Old Hwy 395
9) SR-76 from Old Hwy 395 to I-15 SB Ramp
10) SR-76 from I-15 SB Ramp to I-15 NB Ramp
11) SR-76 from I-15 NB Ramp to Pankey Road
12) SR-76 from Pankey Road to Horse Ranch Creek Road
13) SR-76 from Horse Ranch Creek Road to Rice Canyon Road
14) SR-76 from Rice Canyon Road to Couser Canyon Road
15) SR-76 from Couser Canyon Road to Pala Mission Road

The existing AM, PM, and ADT volumes are shown on **Figures 5a, 5b and 5c**. Please note that the intersection of SR-76 at Pankey Place is currently closed as part of the current SR-76 widening from 2 to 4 lanes east of I-15; therefore, the previous count from 12/4/07 was utilized. Roadway count data, freeway data, Caltrans freeway factors, and pictures of the current widening of SR-76 are included in **Appendix D**. The LOS calculated for the intersections, roadway segments, state route segments, and freeway segments are shown in **Tables 4a, 4b, 5, 6a, 6b, and 7**, respectively. SR-76 from the I-15 NB Ramp easterly a distance of approximately 1.4 miles is currently being widened from 2 to 4 lanes. The state route LOS for this portion is reported both under current 2 lane conditions (Table 6a) and when completed with 4 lanes (Table 6b). The SR-76 peak hour volumes and capacities reported in Table 6a and 6b are included at the end of Appendix D.

Figure 5a: Existing Volumes

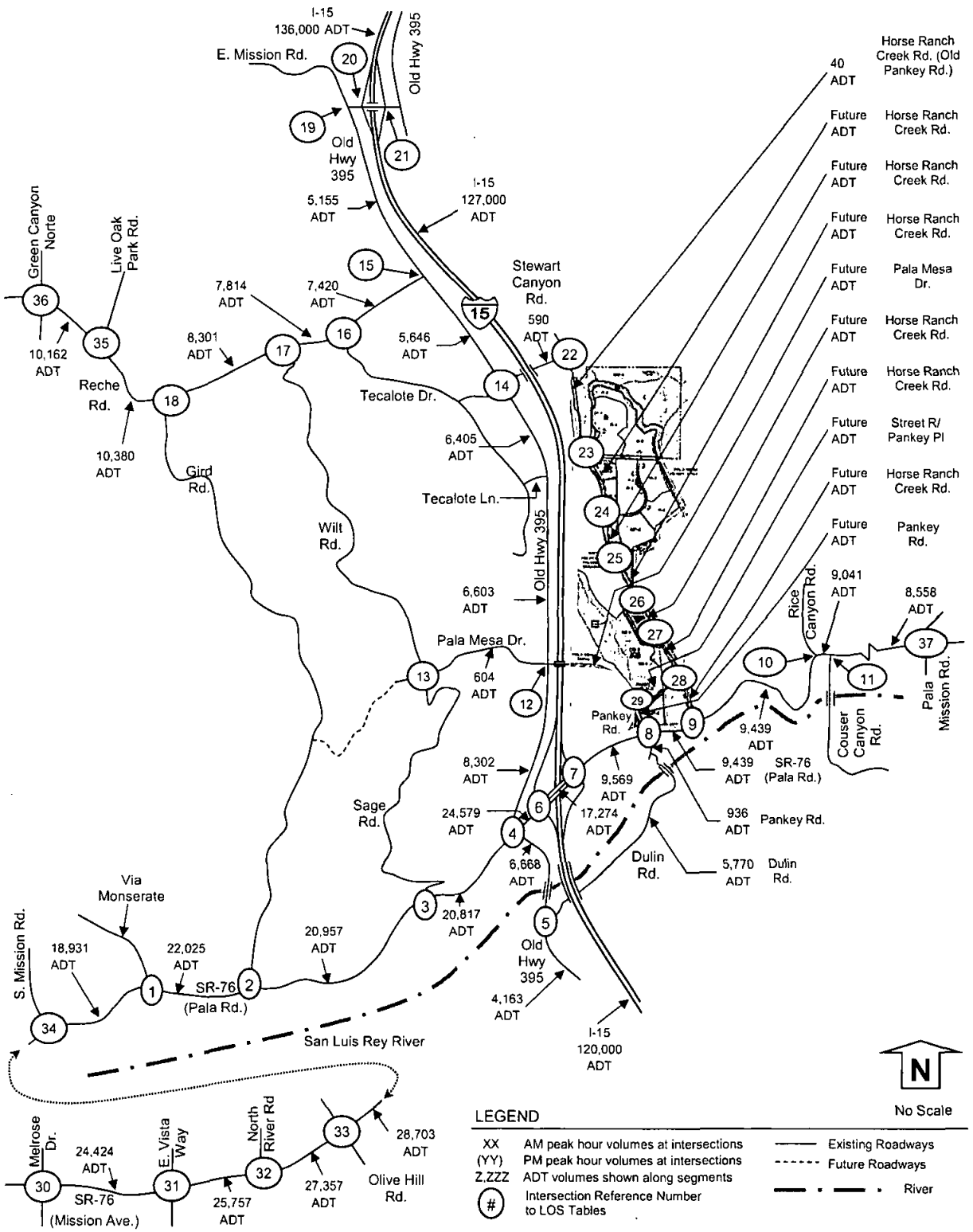


Figure 5b: Existing Volumes

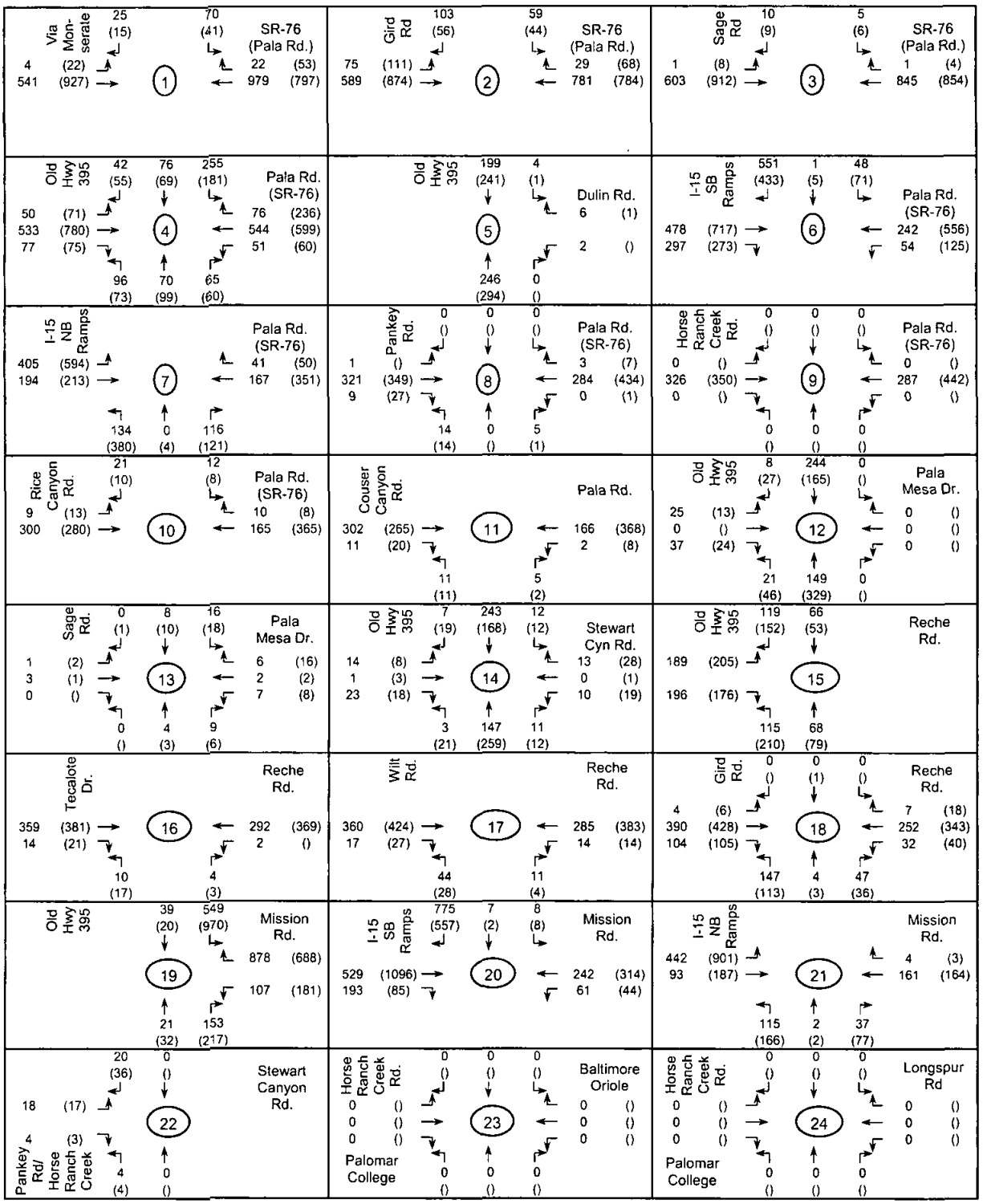


Figure 5c: Existing Volumes

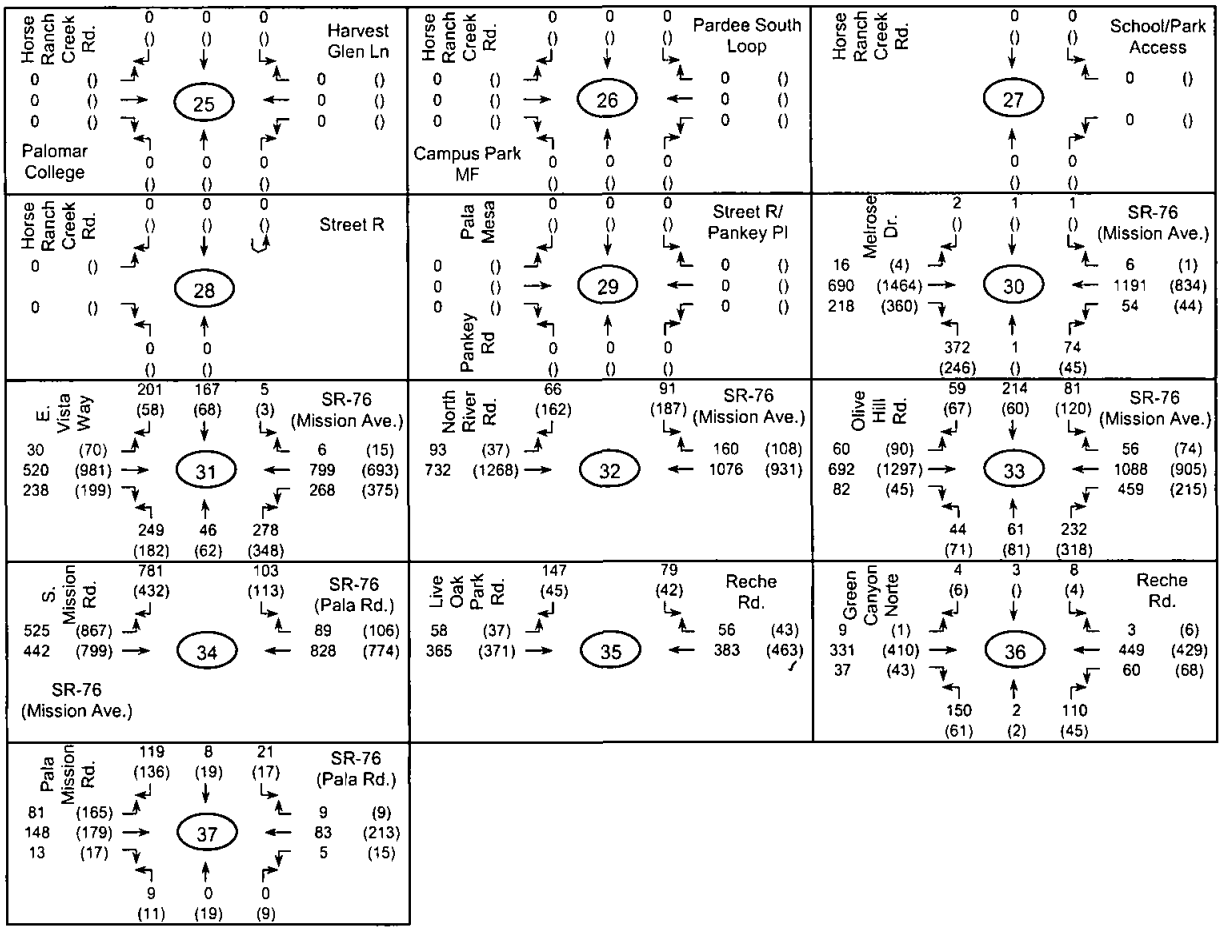


TABLE 4A: EXISTING INTERSECTION LEVEL OF SERVICE

Intersection and (Analysis)[1]	Movement	Peak Hour	Existing Delay[2]	Existing LOS[3]
1) SR-76 (Pala Rd) at	SB LR	AM	86.1	**F**
Via Monserate (U)	SB LR	PM	91.4	**F**
	All	AM	5.0	A
	All	PM	2.9	A
2) SR-76 (Pala Rd) at	All	AM	12.9	B
Gird Rd (S)	All	PM	12.6	B
3) SR-76 (Pala Rd) at	SB LR	AM	22.6	C
Sage Rd (U)	SB LR	PM	33.0	**D**
	All	AM	0.2	A
	All	PM	0.4	A
4) SR-76 (Pala Rd) at	All	AM	29.7	C
Old Hwy 395 (S)	All	PM	30.2	C
5) Old Hwy 395 at	WB LR	AM	10.1	B
Dulin Rd (U)	WB LR	PM	11.2	B
6) SR-76 (Pala Rd) at	All	AM	27.5	C
I-15 SB Ramps (S)	All	PM	26.4	C
7) SR-76 (Pala Rd) at	All	AM	22.4	C
I-15 NB Ramps (S)	All	PM	43.6	D
8) SR-76 (Pala Rd) at	NB LTR	AM	12.2	B
Pankey Road (U)	NB LTR	PM	14.6	B
	SB LTR	AM	0.0	A
	SB LTR	PM	0.0	A
9) SR-76 (Pala Rd) at	DNE	AM	DNE	NA
Horse Ranch Crk Rd	DNE	PM	DNE	NA
10) SR-76 (Pala Rd) at	SB LR	AM	10.5	B
Rice Canyon Road (U)	SB LR	PM	12.4	B
11) SR-76 (Pala Rd) at	NB LR	AM	11.4	B
Couser Canyon Road (U)	NB LR	PM	13.5	B
12) Old Highway 395 at	EB LTR	AM	11.0	B
Pala Mesa Dr (U)	EB LTR	PM	11.1	B
	WB LTR	AM	DNE	NA
	WB LTR	PM	DNE	NA
13) Pala Mesa Dr at	NB LTR	AM	8.6	A
Sage Road (U)	SB LTR	AM	9.0	A
	NB LTR	PM	8.7	A
	SB LTR	PM	9.1	A
14) Old Highway 395 at	WB LTR	AM	10.8	B
Stewart Canyon Road (U)	WB LTR	PM	11.9	B
15) Old Highway 395 at	EB LR	AM	18.4	C
Reche Road (U)	EB LR	PM	35.9	**E**
	All	AM	10.6	B
	All	PM	17.6	B
16) Reche Road at	NB LR	AM	13.1	B
Tecalote Dr (U)	NB LR	PM	15.0	C
17) Reche Road at	NB LR	AM	14.8	B
Wilt Road (U)	NB LR	PM	17.2	C
18) Reche Road at	All	AM	14.4	B
Gird Road (S)	All	PM	13.9	B
19) Mission Road at	SB L	AM	12.4	B
Old Highway 395 (S)	SB L	PM	30.4	C
20) Mission Road at	SB LTR	AM	27.3	C
I-15 SB Ramps (S)	SB LTR	PM	26.0	C
21) Mission Road at	All	AM	17.2	B
I-15 NB Ramps (S)	All	PM	37.5	D

Continued on next page

TABLE 4B: EXISTING INTERSECTION LEVEL OF SERVICE

Intersection and (Analysis)[1]	Movement	Peak Hour	Existing Delay[2]	Existing LOS[3]
22) Stewart Canyon Rd at	EB LR	AM	8.7	A
HRCR/Pankey Road (U)	EB LR	PM	8.7	A
23) Horse Ranch Crk Rd at	WB LR	AM	DNE	NA
Baltimore Oriole (U)	WB LR	PM	DNE	NA
24) Horse Ranch Crk Rd at	All-Way	AM	DNE	NA
Longspur Rd (U)	All-Way	PM	DNE	NA
25) Horse Ranch Crk Rd at	All-Way	AM	DNE	NA
Harvest Glen Ln (U)	All-Way	PM	DNE	NA
26) Horse Ranch Crk Rd at	WB LR	AM	DNE	NA
Pardee South Loop (U)	WB LR	PM	DNE	NA
27) Horse Ranch Crk Rd at	WB LR	AM	DNE	NA
School/Park Access (U)	WB LR	PM	DNE	NA
28) Horse Ranch Crk Rd	All-Way	AM	DNE	NA
at Street R (U)	All-Way	PM	DNE	NA
29) Pankey/Pala Mesa Dr	WB LR	AM	DNE	NA
at Street R (U)	WB LR	PM	DNE	NA
30) SR-76 (Mission Ave) at	All	AM	30.3	C
Melrose Drive (S)	All	PM	26.3	C
31) SR-76 (Mission Ave) at	All	AM	60.9	E
E. Vista Way (S)	All	PM	48.4	D
32) SR-76 (Mission Ave) at	All	AM	61.7	E
North River Rd (S)	All	PM	29.7	C
33) SR-76 (Mission Ave) at	All	AM	53.8	D
Olive Hill Rd (S)	All	PM	52.9	D
34) SR-76 (Mission Ave) at	All	AM	18.9	B
S. Mission Rd (S)	All	PM	21.5	C
35) Reche Rd at	SB LR	AM	23.0	C
Live Oak Park Rd (U)	SB LR	PM	18.0	C
36) Reche Rd at	All	AM	21.3	C
Green Canyon Norte (S)	All	PM	21.0	C
37) SR-76 (Pala Rd.) at	All	AM	29.3	C
Pala Mission Rd. (S)	All	PM	32.4	C

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized 2) Delay - HCM Control Delay in seconds. 3) LOS: Level of Service.
DNE: Does Not Exist. NA: Not Applicable.

TABLE 5: EXISTING SEGMENT ADT VOLUMES AND LEVEL OF SERVICE

Segment	Classification Circulation Element (9/05)	Existing Daily Volume	# of lanes	LOS E Capacity	V/C	LOS
Dulin Road						
Old Highway 395 to Pankey Road	Light Collector	5,770	2	16,200	0.36	C
Old Highway 395						
East Mission Road to Reche Road	Collector	5,155	2	16,200	0.32	C
Reche Road to Stewart Canyon Road	Collector	5,646	2	16,200	0.35	C
Stewart Canyon Road to Tecalote Lane	Collector	6,405	2	16,200	0.40	C
Tecalote Lane to Pala Mesa Drive	Collector	6,603	2	16,200	0.41	C
Pala Mesa Drive to SR-76 (Pala Road)	Collector	8,302	2	16,200	0.51	D
SR-76 (Pala Road) to Dulin Road	Collector	6,668	2	16,200	0.41	C
Dulin Road to W. Lilac Road	Rural Collector	4,163	2	16,200	0.26	C
Reche Road						
Green Canyon Norte to Live Oak Park Road	Rural Collector	10,162	2	16,200	0.63	D
Live Oak Park Road to Gird Road	Rural Collector	10,380	2	16,200	0.64	D
Gird Road to Wilt Road	Rural Collector	8,301	2	16,200	0.51	D
Wilt Road to Tecalote Road	Rural Collector	7,814	2	16,200	0.48	D
Tecalote Drive to Old Highway 395	Rural Collector	7,420	2	16,200	0.46	D
Stewart Canyon Road						
Old Hwy 395 to Horse Ranch Creek Rd	Light Collector	590	2	16,200	0.04	A
Pankey Road						
Stewart Canyon Rd to Baltimore Oriole (#23)	Light Collector	40	2	16,200	0.00	A
Break in Pankey Road						
Street R/Pankey Place to SR-76 (Pala Rd)	Light Collector	Minimal	NA	NA	NA	NA
SR-76 (Pala Road) to Shearer Crossing	Light Collector	936	2	16,200	0.06	A
Pala Mesa Drive						
Wilt Rd/Sage Rd to Old Highway 395	Light Collector	604	2	16,200	0.04	A

Notes: Classification per September 2005 Circulation Element Maps. Daily volume is a 24 hour volume.
LOS: Level of Service. V/C: Volume to Capacity ratio. NA: Not Applicable.

TABLE 6A: EXISTING STATE ROUTE VOLUMES AND LEVEL OF SERVICE (WITHOUT GRANITE IMPROVEMENT)

State Route 76	Lanes in	AM (Eastbound)					AM (Westbound)					PM (Eastbound)					PM (Westbound)				
Study Limits (direct & cumulative)	each dir	Vol	Dir	Cap	v/c	LOS	Vol	Dir	Cap	v/c	LOS	Vol	Dir	Cap	v/c	LOS	Vol	Dir	Cap	v/c	LOS
Melrose Dr to E. Vista Way	1	999	EB	1300	0.77	D	1469	WB	1300	1.13	F	1456	EB	1300	1.12	F	1001	WB	1300	0.77	D
E. Vista Way to North River Rd	1	718	EB	950	0.76	D	1040	WB	950	1.09	F	1107	EB	950	1.17	F	652	WB	950	0.69	C
North River Rd to Olive Hill Rd	1	852	EB	950	0.90	E	1200	WB	950	1.26	F	1176	EB	950	1.24	F	781	WB	950	0.82	D
Olive Hill Rd to S Mission Rd	1	1031	EB	950	1.09	F	1245	WB	950	1.31	F	1457	EB	950	1.53	F	1069	WB	950	1.13	F
S Mission Rd to Via Monserate	1	745	EB	950	0.78	D	901	WB	950	0.95	E	1064	EB	950	1.12	F	618	WB	950	0.65	C
Via Monserate to Gird Rd	1	808	EB	950	0.85	D	895	WB	950	0.94	E	1077	EB	950	1.13	F	786	WB	950	0.83	D
Gird Rd to Sage Rd	1	740	EB	950	0.78	D	542	WB	950	0.57	C	645	EB	950	0.68	C	742	WB	950	0.78	D
Sage Rd to Old Hwy 395	1	760	EB	950	0.80	D	534	WB	950	0.56	C	638	EB	950	0.67	C	768	WB	950	0.81	D
Old Hwy 395 to I-15 SB Ramps	2	1507	EB	2050	0.74	D	665	WB	2028	0.33	B	816	EB	2050	0.40	B	1258	WB	2028	0.62	C
I-15 SB Ramps to I-15 NB Ramps	1	844	EB	950	0.89	E	539	WB	950	0.57	C	718	EB	950	0.76	D	1153	WB	950	1.21	F
I-15 NB Ramps to Pankey Rd	1	559	EB	950	0.59	C	606	WB	950	0.64	C	696	EB	950	0.73	D	820	WB	950	0.86	E
Pankey Rd to Horse Ranch Creek Rd	1	589	EB	950	0.62	C	540	WB	950	0.57	C	631	EB	950	0.66	C	897	WB	950	0.94	E
Horse Ranch Creek Rd to Rice Cyn	1	588	EB	950	0.62	C	539	WB	950	0.57	C	631	EB	950	0.66	C	897	WB	950	0.94	E
Rice Cyn to Couser Cyn	1	589	EB	950	0.62	C	540	WB	950	0.57	C	526	EB	950	0.55	C	930	WB	950	0.98	E
Couser Cyn to Pala Mission Rd	1	634	EB	950	0.67	C	357	WB	950	0.38	B	434	EB	950	0.46	B	950	WB	950	1.00	F

Source: SANDAG Hwycov 2007. Notes: Dir = Direction. Vol = Volume. Cap = Capacity. v/c = volume to capacity ratio. LOS = Level of Service.

TABLE 6B: EXISTING STATE ROUTE VOLUMES AND LEVEL OF SERVICE (WITH GRANITE IMPROVEMENT)

State Route 76	Lanes in	AM (Eastbound)					AM (Westbound)					PM (Eastbound)					PM (Westbound)				
Study Limits (direct & cumulative)	each dir	Vol	Dir	Cap	v/c	LOS	Vol	Dir	Cap	v/c	LOS	Vol	Dir	Cap	v/c	LOS	Vol	Dir	Cap	v/c	LOS
Melrose Dr to E. Vista Way	1	999	EB	1300	0.77	D	1469	WB	1300	1.13	F	1456	EB	1300	1.12	F	1001	WB	1300	0.77	D
E. Vista Way to North River Rd	1	718	EB	950	0.76	D	1040	WB	950	1.09	F	1107	EB	950	1.17	F	652	WB	950	0.69	C
North River Rd to Olive Hill Rd	1	852	EB	950	0.90	E	1200	WB	950	1.26	F	1176	EB	950	1.24	F	781	WB	950	0.82	D
Olive Hill Rd to S Mission Rd	1	1031	EB	950	1.09	F	1245	WB	950	1.31	F	1457	EB	950	1.53	F	1069	WB	950	1.13	F
S Mission Rd to Via Monserate	1	745	EB	950	0.78	D	901	WB	950	0.95	E	1064	EB	950	1.12	F	618	WB	950	0.65	C
Via Monserate to Gird Rd	1	808	EB	950	0.85	D	895	WB	950	0.94	E	1077	EB	950	1.13	F	786	WB	950	0.83	D
Gird Rd to Sage Rd	1	740	EB	950	0.78	D	542	WB	950	0.57	C	645	EB	950	0.68	C	742	WB	950	0.78	D
Sage Rd to Old Hwy 395	1	760	EB	950	0.80	D	534	WB	950	0.56	C	638	EB	950	0.67	C	768	WB	950	0.81	D
Old Hwy 395 to I-15 SB Ramps	2	1507	EB	2050	0.74	D	665	WB	2028	0.33	B	816	EB	2050	0.40	B	1258	WB	2028	0.62	C
I-15 SB Ramps to I-15 NB Ramps	1	844	EB	950	0.89	E	539	WB	950	0.57	C	718	EB	950	0.76	D	1153	WB	950	1.21	F
I-15 NB Ramps to Pankey Rd	2	559	EB	3100	0.18	A	606	WB	3030	0.20	A	696	EB	3100	0.22	A	820	WB	3030	0.27	A
Pankey Rd to Horse Ranch Creek Rd	2	589	EB	1806	0.33	B	540	WB	2028	0.27	A	631	EB	1806	0.35	B	897	WB	2028	0.44	B
Horse Ranch Creek Rd to Rice Cyn	1	588	EB	950	0.62	C	539	WB	950	0.57	C	631	EB	950	0.66	C	897	WB	950	0.94	E
Rice Cyn to Couser Cyn	1	589	EB	950	0.62	C	540	WB	950	0.57	C	526	EB	950	0.55	C	930	WB	950	0.98	E
Couser Cyn to Pala Mission Rd	1	634	EB	950	0.67	C	357	WB	950	0.38	B	434	EB	950	0.46	B	950	WB	950	1.00	F

Source: SANDAG Hwycov 2007. Notes: Dir = Direction. Vol = Volume. Cap = Capacity. v/c = volume to capacity ratio. LOS = Level of Service.

TABLE 7: EXISTING (2006) FREEWAY VOLUMES AND LEVEL OF SERVICE

Freeway	I-15				I-15				I-15			
Segment	Rainbow Valley Blvd to Mission Rd				Mission Rd to SR-76 (Pala Rd)				SR-76 to Escondido Hwy (Old 395)			
Existing (Year 2006)												
ADT	136,000				127,000				120,000			
Peak Hour	A M		P M		A M		P M		A M		P M	
Direction	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
Number of Lanes	4	4	4	4	4	4	4	4	4	4	4	4
Capacity (1)	9,400	9,400	9,400	9,400	9,400	9,400	9,400	9,400	9,400	9,400	9,400	9,400
K Factor (2)	0.0619	0.0619	0.0738	0.0738	0.0619	0.0619	0.0738	0.0738	0.0590	0.0590	0.0723	0.0723
D Factor (3)	0.1653	0.8347	0.6398	0.3602	0.1653	0.8347	0.6398	0.3602	0.1989	0.8011	0.6955	0.3045
Truck Factor (4)	0.9186	0.9186	0.9186	0.9186	0.9186	0.9186	0.9186	0.9186	0.8977	0.8977	0.8977	0.8977
Peak Hour Volume	1,515	7,650	6,991	3,936	1,415	7,143	6,528	3,675	1,569	6,318	6,722	2,943
Volume to Capacity	0.161	0.814	0.744	0.419	0.150	0.760	0.694	0.391	0.167	0.672	0.715	0.313
LOS	A	D	C	A	A	C	C	A	A	C	C	A

Notes: (1) Capacity of 2,350 passenger cars per hour per lane (pcphpl) from Caltrans' Guide for the Preparation of Traffic Impact Studies, Dec 2002. (2) Latest K factor from Caltrans (based on 2005 data), which is the percentage of Annual Average Daily Traffic (AADT) in both directions. (3) Latest D factor from Caltrans (based on 2005 data), which when multiplied by K and ADT will provide peak hour volume. (4) Latest truck factor from Caltrans (based on 2000 data).

Under existing conditions, all study intersections and roadways were calculated to operate at LOS D or better with the exception of the:

Intersections

1) Intersection of SR-76 (Pala Rd) / Via Monserate (LOS F AM & PM for minor leg critical movement; however, overall intersection is at LOS A AM & PM)
2) Intersection of Old Highway 395 / Reche Road (LOS E PM for minor leg critical movement; however, overall intersection is at LOS B AM & PM)
3) Intersection of SR-76 (Mission Ave) / E. Vista Way (LOS E AM)
4) Intersection of SR-76 (Mission Ave) / North River Road (LOS E AM)

State Routes

1) State Route 76 from Melrose Dr to E. Vista Way (LOS F AM & PM)
2) State Route 76 from E. Vista Way to North River Rd (LOS F AM & PM)
3) State Route 76 from North River Rd to Olive Hill Rd (LOS F AM & PM)
4) State Route 76 from Olive Hill Rd to S Mission Rd (LOS F AM & PM)
5) State Route 76 from S Mission Rd to Via Monserate (LOS E AM & LOS F PM)
6) State Route 76 from Via Monserate to Gird Rd (LOS E AM & LOS F PM)
7) State Route 76 from I-15 SB Ramp to I-15 NB Ramp (LOS E AM & LOS F PM)
8) State Route 76 from I-15 NB Ramp to Pankey Road (LOS E PM)
9) State Route 76 from Pankey Road to Horse Ranch Creek Rd (LOS E PM)
10) State Route 76 from Horse Ranch Creek Rd to Rice Canyon Rd (LOS E PM)
11) State Route 76 from Rice Canyon Rd to Couser Canyon Rd (LOS E PM)
12) State Route 76 from Couser Canyon Rd to Pala Mission Rd (LOS F PM)

Existing LOS calculations are included in **Appendix E**.

2.2 Existing Parking, Transit and On-site Circulation

The project site is generally vacant. No nearby transit service routes are published.

3.0 Project Impact Analysis

3.1 Analysis Methodology

The project study area is generally determined by the limits or extent of where 50 or more peak hour project trips would travel in either direction for direct impact calculations and where 25 peak hour project trips would travel in each direction for cumulative impact calculations, which are documented in the San Diego County *Report Format & Content Requirements Transportation and Traffic*, December 5, 2007.

The traffic analyses prepared for this study were based on the *2000 Highway Capacity Manual* (HCM) operations analysis using Level of Service (LOS) evaluation criteria. The operating conditions of the study intersections, roadway segments, and highway segments are measured using the HCM LOS designations, which range from A through F. LOS A represents the best operating condition and LOS F denotes the worst operating condition. The individual LOS criteria for each roadway component are described below.

3.1.1 Intersections

The study intersections were analyzed based on the **operational analysis** outlined in the 2000 HCM. This process defines LOS in terms of **average control delay** per vehicle, which is measured in seconds. LOS at the intersections were calculated using the computer software program Synchro 6.0 (Trafficware Corporation, 2003). The HCM LOS for the range of delay by seconds for un-signalized and signalized intersections is described in **Table 8**.

TABLE 8: UN-SIGNALIZED AND SIGNALIZED INTERSECTION LEVEL OF SERVICE (HCM 2000)

Level of Service	Un-Signalized Average Control Delay (seconds/vehicle)	Signalized Average Control Delay (seconds/vehicle)
A	0-10	0-10
B	> 10-15	> 10-20
C	> 15-25	> 20-35
D	> 25-35	> 35-55
E	> 35-50	> 55-80
F	> 50	> 80

Source: Highway Capacity Manual 2000.

3.1.2 Roadway Segments

The roadway segments were analyzed based on the functional classification of the roadway using the County of San Diego *Average Daily Vehicle Trips* capacity lookup table. The roadway segment capacity and LOS standards used to analyze roadway segments are summarized in **Table 9**.

TABLE 9: ROADWAY SEGMENT DAILY CAPACITY AND LOS (COUNTY OF SAN DIEGO)

Circulation Element Road Classification	CROSS SECTION	LOS A	LOS B	LOS C	LOS D	LOS E
Expressway	126/146	<36,000	<54,000	<70,000	<86,000	<108,000
Prime Arterial	102/122	<22,200	<37,000	<44,600	<50,000	<57,000
Major Road	78/98	<14,800	<24,700	<29,600	<33,400	<37,000
Collector	64/84	<13,700	<22,800	<27,400	<30,800	<34,200
Town Collector	54/74	<3,000	<6,000	<9,500	<13,500	<19,000
Light Collector	40/60	<1,900	<4,100	<7,100	<10,900	<16,200
Rural Collector	40/84	<1,900	<4,100	<7,100	<10,900	<16,200
Rural Light Collector	40/60	<1,900	<4,100	<7,100	<10,900	<16,200
Recreational Parkway	40/100	<1,900	<4,100	<7,100	<10,900	<16,200
Rural Mountain	40/100	<1,900	<4,100	<7,100	<10,900	<16,200
Non-Circulation Roads						
Residential Collector	40/60	NA	NA	<4,500	NA	NA
Residential Road	36/56	NA	NA	<1,500	NA	NA

Source: County of San Diego Department of Public Works *Public Road Standards* July 14, 1999.

3.1.3 State Route Segments

The state route segments were analyzed using a Volume to Capacity (V/C) ratio as outlined in the 2000 HCM. This approach is consistent with the County's current method for reporting segment operations for state routes and is consistent with the method using in the General Plan Update. The V/C ratio formulas and associated LOS were provided by SANDAG (included in **Appendix F**) and are shown in **Table 10**.

TABLE 10: STATE ROUTE LEVEL OF SERVICE (SANDAG)

Measure of Effectiveness	LOS A - C	LOS D	LOS E	LOS F
Volume/Capacity Ratio	0.00 - 0.70	0.71 - 0.85	0.86 - 0.99	> 1.00

Source: SANDAG.

3.1.4 Freeway Segments

The freeway segments were analyzed based on a multilane highway LOS criteria using a Volume to Capacity (V/C) ratio as outlined in the 2000 HCM. The accepted methodology by Caltrans for the analysis of freeway sections is to use the most current edition of the HCM as noted on page 5 of Caltrans' *Guide for the Preparation of Traffic Impact Studies*, December 2002, which also documents a maximum service flow rate of 2,350 passenger cars per hour per lane. The freeway LOS operations are based on the SANDAG's *2006 Congestion Management Program* Update (July 2006) V/C ratios as summarized below in **Table 11**. An excerpt from the SANDAG CMP and the Caltrans maximum service flow rate are both included in **Appendix G**.

TABLE 11: FREEWAY LEVEL OF SERVICE (SANDAG)

Measure of Effectiveness	LOS A - C	LOS D	LOS E	LOS F
Volume/Capacity Ratio	0.00 - 0.79	0.80 - 0.92	0.93 - 1.00	> 1.00

Source: *2006 SANDAG Congestion Management Program*, page 113.

3.2 Project Traffic Generation

This section describes the anticipated interim construction traffic generation and the final product traffic generation.

3.2.1 Construction Traffic Generation

Construction traffic will consist of workers and delivery trucks primarily accessing the site from SR-76 via I-15. An estimated maximum of 80 workers and 24 daily truck deliveries are anticipated during each construction phase. The construction is anticipated to occur over a ten year period. The project is designed to have the earthwork balanced; therefore, no import or export of soil is anticipated.

The construction traffic would result in a temporary increase in traffic on local area roadways; however, the amount of temporary traffic will be less than the final product described in the next section and analyzed within this study. Projecting the potential construction delays on specific roadway segments for the full ten years would be speculative and would not result in the planned implementation of standard traffic control procedures. When needed, traffic control plans will be submitted under separate cover for related roadway construction projects.

3.2.2 Final Product Traffic Generation

The final traffic generation was calculated using SANDAG rates from the *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002. Based on SANDAG rates the project is calculated to generate 19,941 ADT, 1,423 AM peak hour trips (689 inbound and 734 outbound), and 2,095 PM peak hour trips (1,130 inbound and 965 outbound) as shown in **Table 12**.

TABLE 12: PROJECT TRAFFIC GENERATION

Proposed Land Use	Rate	Size & Units		ADT	AM %	AM Split		AM IN	AM OUT	PM %	PM Split		PM IN	PM OUT
Residential - Single Family	10 /DU	521	DU	5,210	8%	0.3	0.7	125	292	10%	0.7	0.3	365	156
Residential - Multi Family	8 /DU	555	DU	4,440	8%	0.2	0.8	71	284	10%	0.7	0.3	311	133
Town Center (Neighborhood Shopping)	120 /KSF	61,200	SF	7,344	4%	0.6	0.4	176	118	10%	0.5	0.5	368	367
Office (more than 100KSF)	17 /KSF	157,000	SF	2,669	13%	0.9	0.1	312	35	14%	0.2	0.8	75	298
Neighborhood Park	5 /Acre	3.6	Acres	18	4%	0.5	0.5	0	0	8%	0.5	0.5	1	1
Neighborhood Park (Sports Complex)	50 /Acre	5.2	Acres	260	4%	0.5	0.5	5	5	8%	0.5	0.5	10	10
Total				19,941				689	734				1,130	965

Source: SANDAG *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002. DU - Dwelling Unit; SF - Square Feet; KSF - 1,000 sf; ADT-Average Daily Traffic; Split-percent inbound and outbound.

The project traffic generation shown above in Table 12 is the most accurate information available at the time this analysis was prepared. Use of other variables such as acreage for the commercial elements was not used because the more accurate and specific building sizes are known and therefore were used.

3.2.3 Project Alternatives Traffic Generation

In addition to the proposed project, there are five project alternatives included in the draft EIR. These include: 1) Existing Plan Alternative, 2) Single Family Alternative, 3) Biological Reduced Footprint Alternative, 4) General Plan Update Draft Land Use Map Alternative, and 5) General Plan Update Board Referral Map Alternative. Site plans for each alternative are included in **Appendix H**.

Alternatives 2 and 3 are calculated to have less traffic than the proposed project while Alternatives 1, 4, and 5 are calculated to have more traffic than the proposed project.

Alternatives 2 and 3 have less daily and less peak hour traffic than the proposed project; therefore, similar roadway improvements for the proposed project can be expected for Alternatives 2 and 3.

A more detailed study would be required to determine if additional mitigation measures would be required for Alternatives 1, 4, and 5.

Overall, the proposed project is calculated to generate less traffic than the Existing Plan Alternative. A comparison of the calculated traffic generation between the alternatives is shown in **Table 13**.

TABLE 13: PROJECT ALTERNATIVES – TRAFFIC GENERATION

Land Use	Rate	Size & Units		ADT	%	Split	AM IN	AM OUT	%	Split	PM IN	PM OUT
Proposed Project												
Residential - Single Family	10 /DU	521	DU	5,210	8%	0.3 0.7	125	292	10%	0.7 0.3	365	156
Residential - Multi Family	8 /DU	555	DU	4,440	8%	0.2 0.8	71	284	10%	0.7 0.3	311	133
Town Center (Neighborhood Shopping)	120 /KSF	61,200	SF	7,344	4%	0.6 0.4	176	118	10%	0.5 0.5	368	367
Office (more than 100KSF)	17 /KSF	157,000	SF	2,669	13%	0.9 0.1	312	35	14%	0.2 0.8	75	299
Neighborhood Park	5 /Acre	3.6	Acres	18	4%	0.5 0.5	0	0	8%	0.5 0.5	1	1
Neighborhood Park (Sports Complex)	50 /Acre	5.2	Acres	260	4%	0.5 0.5	5	5	8%	0.5 0.5	10	10
Proposed Project Total				**19,941**			**690**	**733**			**1,130**	**966**
1) Existing Plan Alternative												
Residential - Single Family	10 /DU	63	DU	630	8%	0.3 0.7	15	35	10%	0.7 0.3	45	19
Office (more than 100KSF)	17 /KSF	825,000	SF	14,025	13%	0.9 0.1	1640	182	14%	0.2 0.8	393	1571
Industrial Park	8 /KSF	1,150,000	SF	9,200	11%	0.9 0.1	910	101	12%	0.2 0.8	221	883
Neighborhood Park	5 /Acre	0.6	Acres	3	4%	0.5 0.5	0	0	8%	0.5 0.5	0	0
Alternative 1 Total				**23,858**			**2,565**	**318**			**659**	**2,473**
2) Single Family Alternative												
Residential - Single Family	10 /DU	750	DU	7,500	8%	0.3 0.7	180	420	10%	0.7 0.3	525	225
Town Center (Neighborhood Shopping)	120 /KSF	61,200	SF	7,344	4%	0.6 0.4	176	118	10%	0.5 0.5	368	367
Office (more than 100KSF)	17 /KSF	157,000	SF	2,669	13%	0.9 0.1	312	35	14%	0.2 0.8	75	299
Neighborhood Park	5 /Acre	2.6	Acres	13	4%	0.5 0.5	0	0	8%	0.5 0.5	1	1
Neighborhood Park (Sports Complex)	50 /Acre	8.5	Acres	425	4%	0.5 0.5	9	9	8%	0.5 0.5	17	17
Alternative 2 Total				**17,951**			**677**	**580**			**986**	**909**
3) Biological Reduced Footprint Alternative												
Residential - Single Family	10 /DU	390	DU	3,900	8%	0.3 0.7	93	218	10%	0.7 0.3	273	117
Residential - Multi Family	8 /DU	255	DU	2,040	8%	0.2 0.8	33	131	10%	0.7 0.3	143	61
Town Center (Neighborhood Shopping)	120 /KSF	61,200	SF	7,344	4%	0.6 0.4	176	118	10%	0.5 0.5	368	367
Office (more than 100KSF)	17 /KSF	157,000	SF	2,669	13%	0.9 0.1	312	35	14%	0.2 0.8	75	299
Neighborhood Park	5 /Acre	1.1	Acres	6	4%	0.5 0.5	0	0	8%	0.5 0.5	0	0
Neighborhood Park (Sports Complex)	50 /Acre	8.5	Acres	425	4%	0.5 0.5	9	9	8%	0.5 0.5	17	17
Alternative 3 Total				**16,384**			**623**	**510**			**876**	**861**
4) General Plan Update Draft Land Use Map Alternative												
Residential - Single Family	10 /DU	248	DU	2,480	8%	0.3 0.7	59	139	10%	0.7 0.3	174	74
Residential - Multi Family	8 /DU	1,059	DU	8,472	8%	0.2 0.8	136	542	10%	0.7 0.3	594	254
Town Center (Neighborhood Shopping)	120 /KSF	188,000	SF	22,560	4%	0.6 0.4	541	361	10%	0.5 0.5	1128	1128
Office (less than 100KSF)	20 /KSF	40,000	SF	800	14%	0.9 0.1	100	11	13%	0.2 0.8	21	83
Neighborhood Park	5 /Acre	2.1	Acres	11	4%	0.5 0.5	0	0	8%	0.5 0.5	0	0
Neighborhood Park (Sports Complex)	50 /Acre	8.5	Acres	425	4%	0.5 0.5	9	9	8%	0.5 0.5	17	17
Alternative 4 Total				**34,748**			**845**	**1,062**			**1,934**	**1,557**
5) General Plan Update Board Referral Map Alternative												
Residential - Single Family	10 /DU	404	DU	4,040	8%	0.3 0.7	96	226	10%	0.7 0.3	283	121
Residential - Multi Family	8 /DU	258	DU	2,064	8%	0.2 0.8	33	132	10%	0.7 0.3	145	62
Town Center (Neighborhood Shopping)	120 /KSF	188,000	SF	22,560	4%	0.6 0.4	541	361	10%	0.5 0.5	1128	1128
Office (less than 100KSF)	20 /KSF	40,000	SF	800	14%	0.9 0.1	100	11	13%	0.2 0.8	21	83
Neighborhood Park	5 /Acre	2.6	Acres	13	4%	0.5 0.5	0	0	8%	0.5 0.5	1	1
Neighborhood Park (Sports Complex)	50 /Acre	8.5	Acres	425	4%	0.5 0.5	9	9	8%	0.5 0.5	17	17
Alternative 5 Total				**29,902**			**779**	**740**			**1,595**	**1,412**

Source: SANDAG *Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region,* April 2002. DU - Dwelling Unit; SF - Square Feet; KSF - 1,000 sf; ADT-Average Daily Traffic; Split-percent inbound and outbound.

3.3 Project Distribution and Assignment

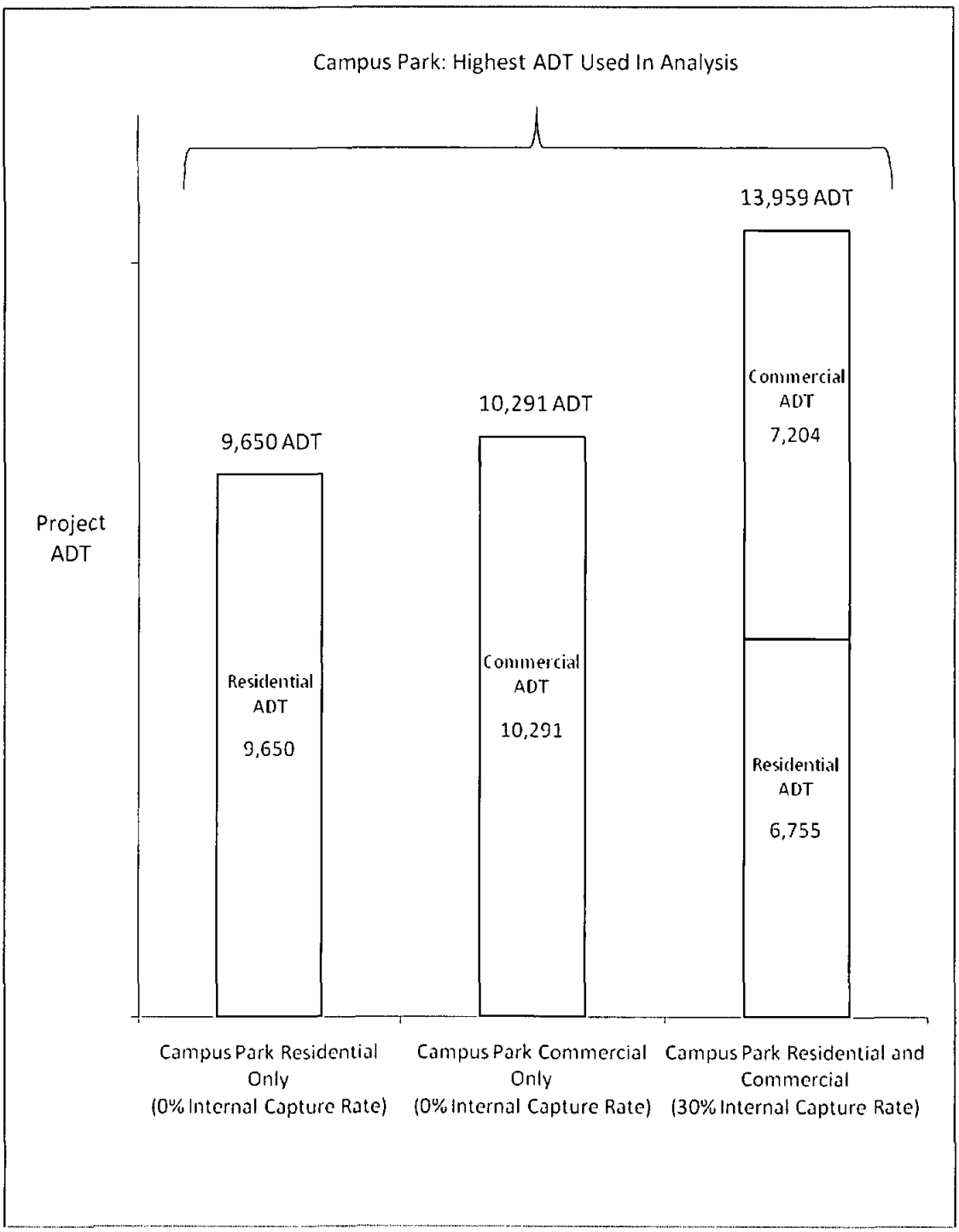
Project trips were distributed based on a SANDAG Series 11 traffic model (a folded copy is included in a pocket at the back of the appendix – after the last appendix page). The Series 11 model is based on a regional model per the 2007 Regional Transportation Plan, not the County's General Plan Update model.

The SANDAG traffic model documented a 33% internal capture rate; however, to be conservative and based on a Caltrans request, the 33% was rounded down to 30%. The internal capture rate reflects the percentage of vehicles that would stay within the Traffic Analysis Zones (TAZs) located northeast of I-15 and SR-76. These TAZs included Campus Park (mixed-use), Campus Park West (mixed-use), Meadowood, and Palomar College. Campus Park West includes developments south of SR-76; however, the 30% internal capture rate was not based on traffic using this commercial area south of SR-76. These combined land uses create the equivalent of a small town where residents have retail, office, commercial, schools, and social attractions all within a short drive, a reasonable walking distance, or a short bike ride. Supporting documentation for the 30% internal capture rate, a County general acceptance letter, and a Caltrans email acceptance are included in **Appendix I**.

The internal capture rate will vary based on the level of mixed-use development and will increase as the commercial uses are built. The residential portion is planned to be constructed first. If the near-term scenario is analyzed with only residential uses (9,650 ADT – without an internal capture rate), then this scenario would have less traffic than the combined residential and commercial (13,959 ADT – with internal capture rate). In other words, the Campus Park residential and commercial uses generate less traffic individually with a 0% internal capture rate than when combined with a 30% internal capture rate as shown in **Figure 6**. A conservative analysis was chosen where the combined residential and commercial uses with a 30% internal capture rate were used for both the near-term and long-term scenarios. This means that the analysis covers the condition where all the residential units are built and then as the commercial is constructed the internal capture evolves to reach the 30% internal capture rate.

The SANDAG model assigned approximately 20% of the residential trips to/from the north and approximately 10% of the commercial trips to/from the north via Stewart Canyon Road. This trip distribution is directly from the SANDAG traffic model, which uses Stewart Canyon Road for more direct access routes to/from the north on I-15 and into and out of Fallbrook (via Reche Rd and E Mission Rd). The center of Campus Park is approximately 1.8 miles from the interchange of I-15/SR-76. Thus, traveling through the I-15/SR-76 interchange to/from the north would add approximately 3.6 miles to the trip and require passing through more intersections.

Figure 6: Project Traffic Generation by Internal Capture Rate



3.3.1 Near-Term Distribution and Assignment (30% Internal Capture Rate)

The near-term scenario documents the condition where only Campus Park is constructed and includes individual residential and commercial distributions. As described previously, the 30% internal capture rate was applied to this scenario as this reflected the highest project ADT (residential + commercial with a 30% internal capture rate) as compared to the individual residential or individual commercial uses.

One significant distribution adjustment to the SANDAG Select Zone Assignment (SZA) was the local absorption to the TAZ just south of SR-76 at Pankey Road. This 16% distribution was re-distributed out to and along I-15. All other distribution percentages are almost verbatim from the SANDAG plot. The near-term residential distribution is shown in **Figures 7a, 7b and 7c**. The near-term residential assignment is shown in **Figures 8a, 8b, and 8c**. The near-term commercial distribution is shown in **Figures 9a, 9b and 9c** with the assignment shown in **Figures 10a, 10b and 10c**. The near-term combined residential and commercial assignment is shown in **Figures 11a, 11b and 11c**.

3.3.2 Long-Term Distribution and Assignment (30% Internal Capture Rate)

The long-term distribution includes a residential and commercial component. As described previously, the 30% internal capture rate was applied to this scenario as this reflect the highest project ADT (residential + commercial with a 30% internal capture rate) as compared to the individual residential or individual commercial components.

All of the long-term distribution percentages are almost verbatim from the SANDAG plot. The long-term residential distribution is shown in **Figures 12a, 12b, and 12c** with the assignment shown in **Figures 13a, 13b, and 13c**. The long-term commercial distribution is shown in **Figures 14a, 14b, and 14c** with the assignment shown in **Figures 15a, 15b, and 15c**. The long-term combined residential and commercial assignment is shown in **Figures 16a, 16b and 16c**.

Figure 7a: Near-Term Residential Distribution (30% Internal Capture Rate)

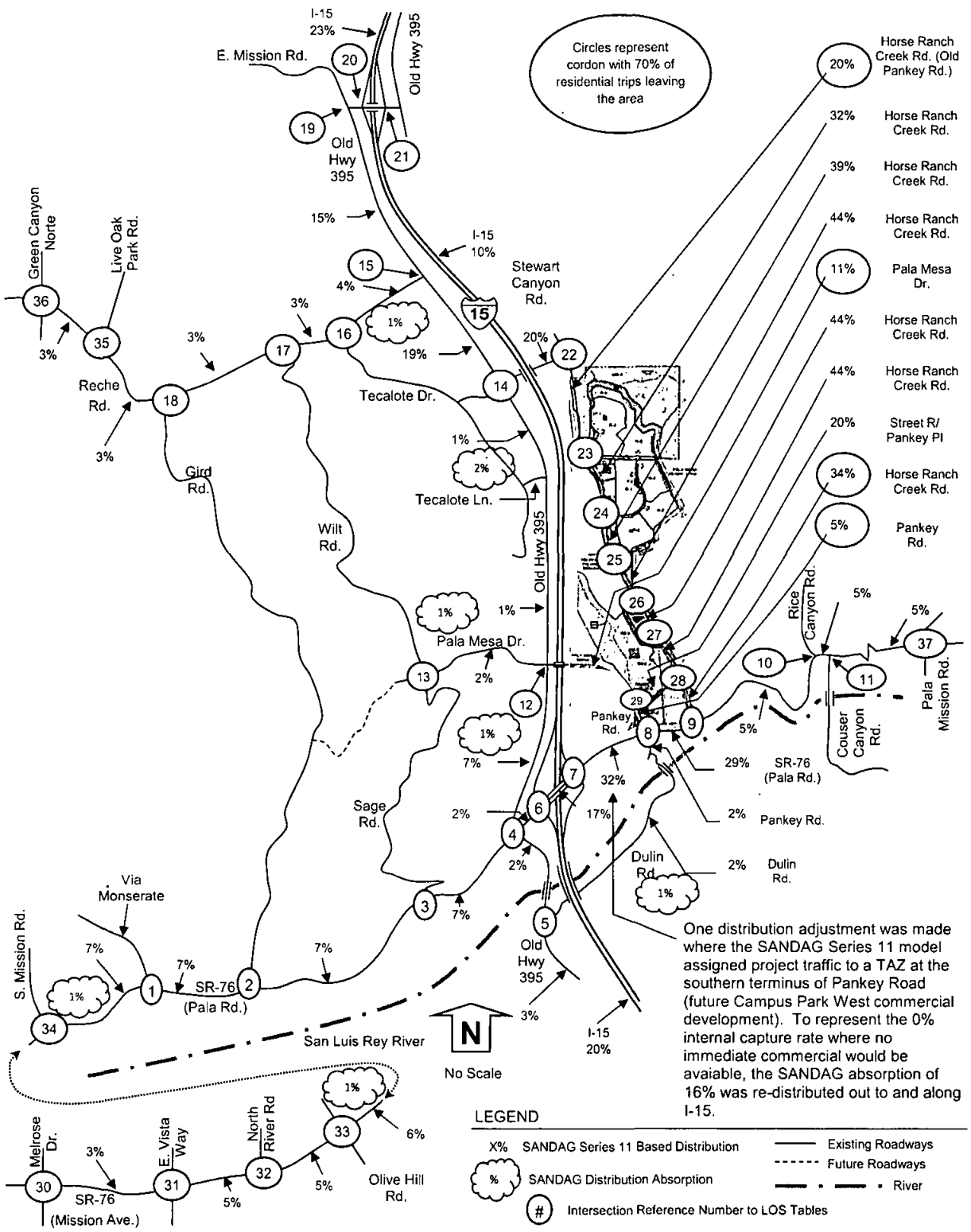


Figure 7b: Near-Term Residential Distribution (30% Internal Capture Rate)

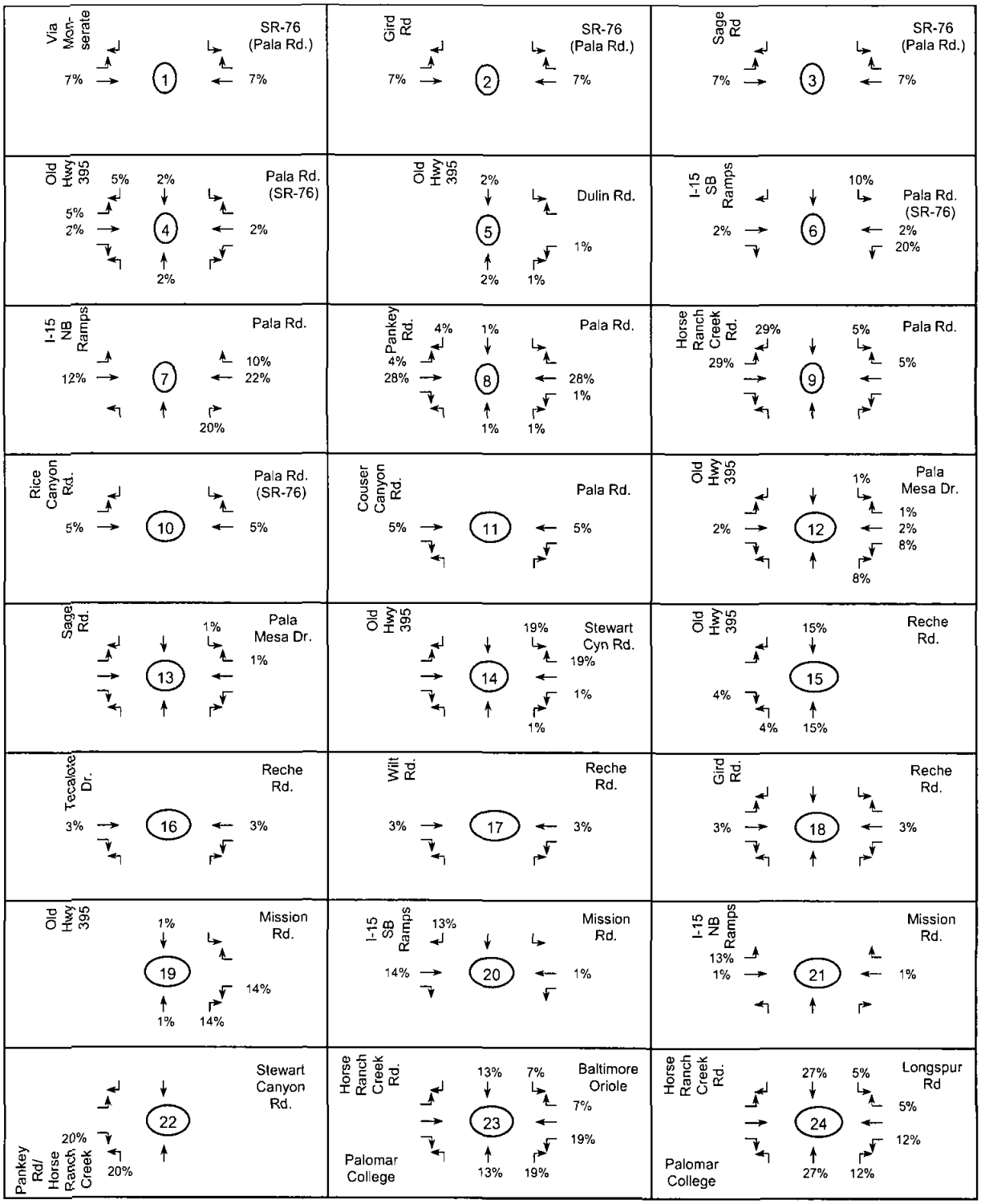
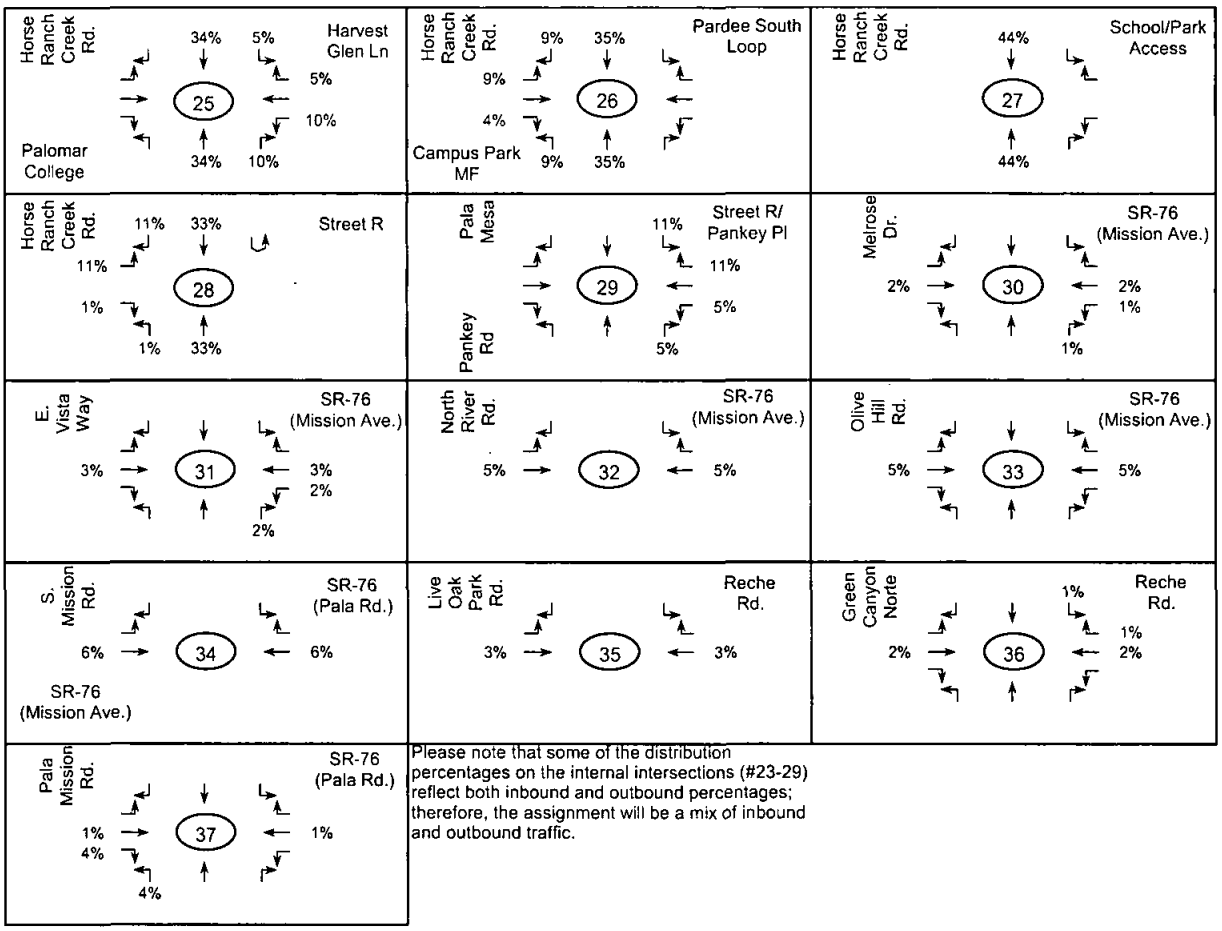


Figure 7c: Near-Term Residential Distribution (30% Internal Capture Rate)



Please note that some of the distribution percentages on the internal intersections (#23-29) reflect both inbound and outbound percentages; therefore, the assignment will be a mix of inbound and outbound traffic.

Figure 8a: Near-Term Residential Assignment (30% Internal Capture Rate)

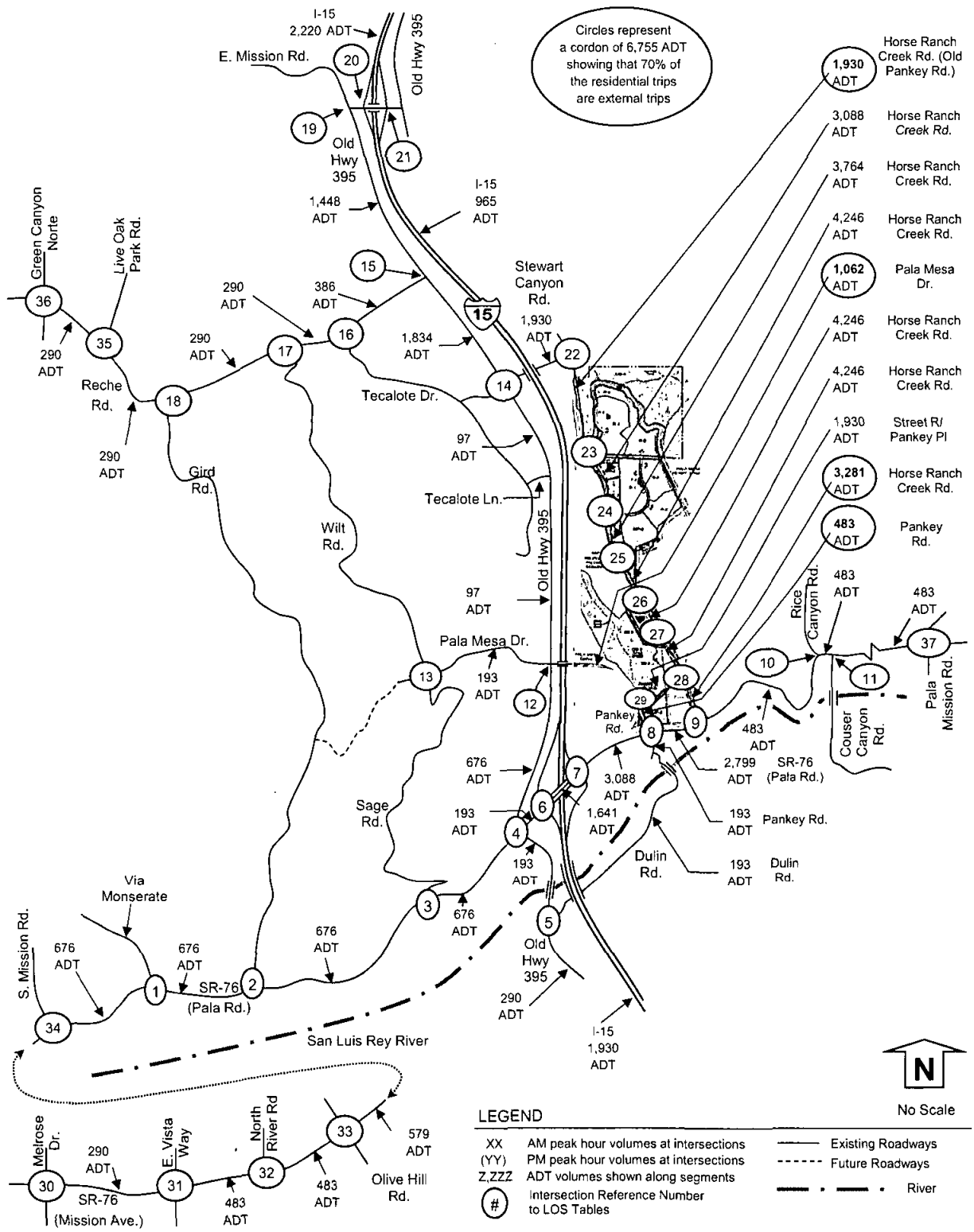


Figure 8b: Near-Term Residential Assignment (30% Internal Capture Rate)

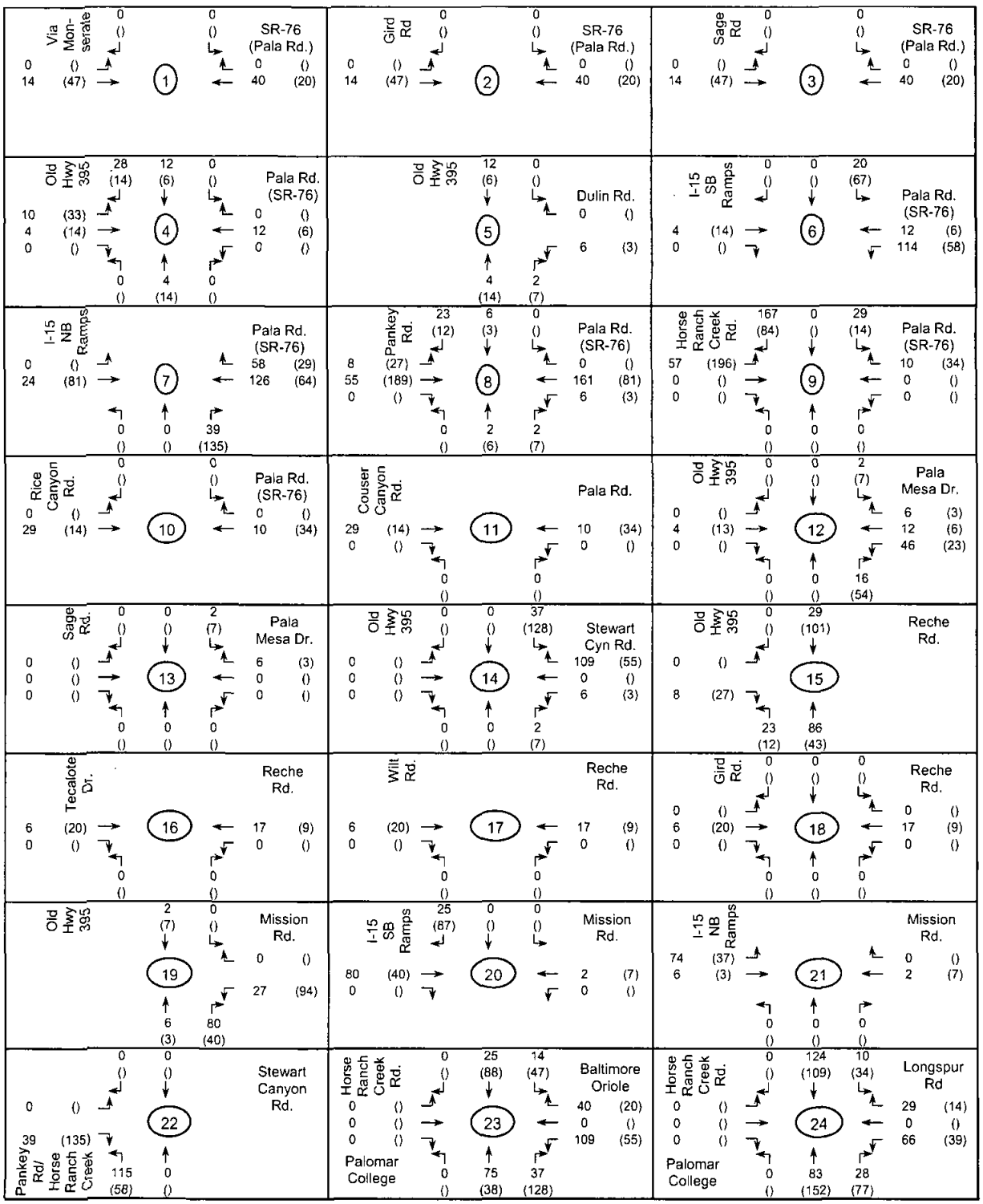


Figure 8c: Near-Term Residential Assignment (30% Internal Capture Rate)

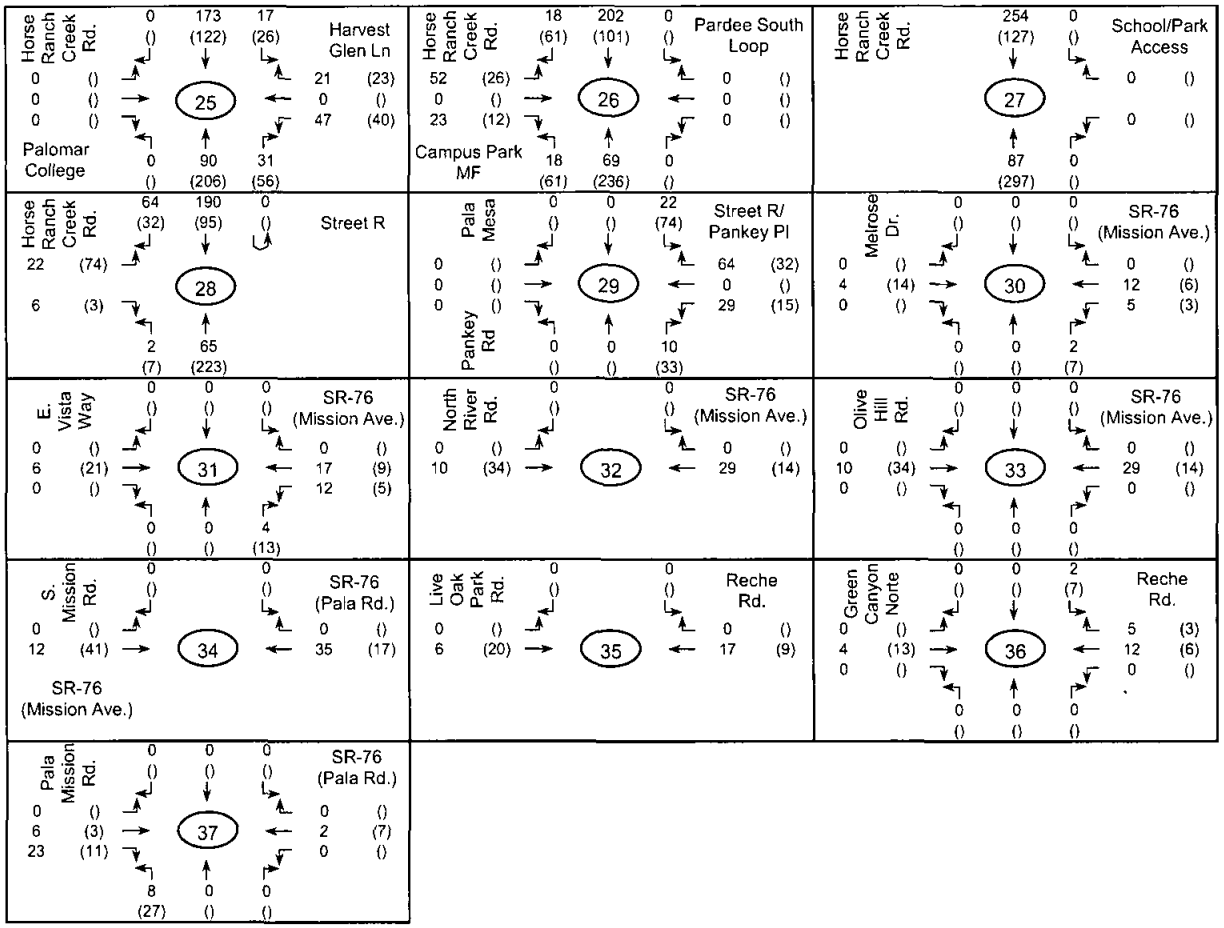


Figure 9a: Near-Term Commercial Distribution (30% Internal Capture Rate)

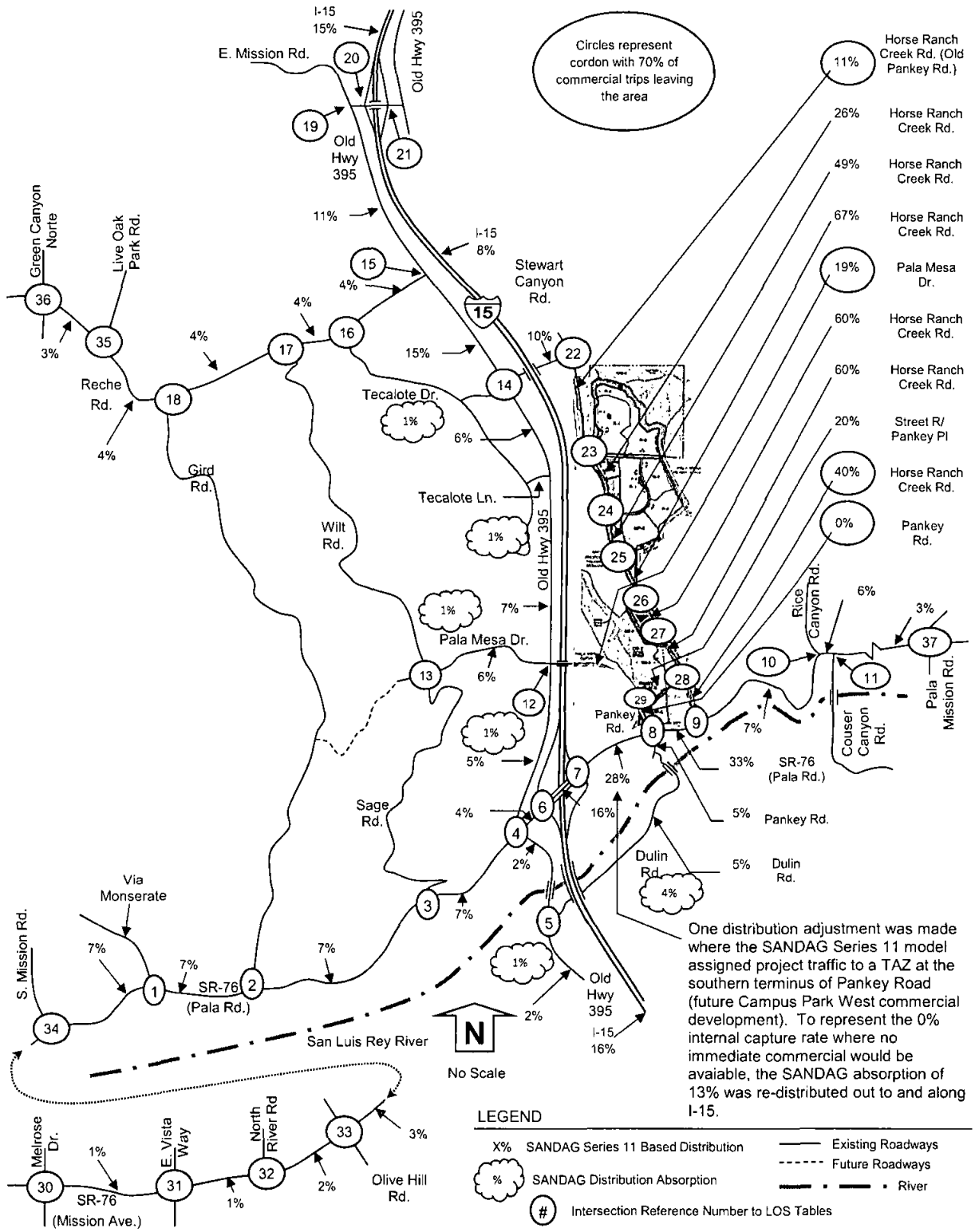


Figure 9b: Near-Term Commercial Distribution (30% Internal Capture Rate)

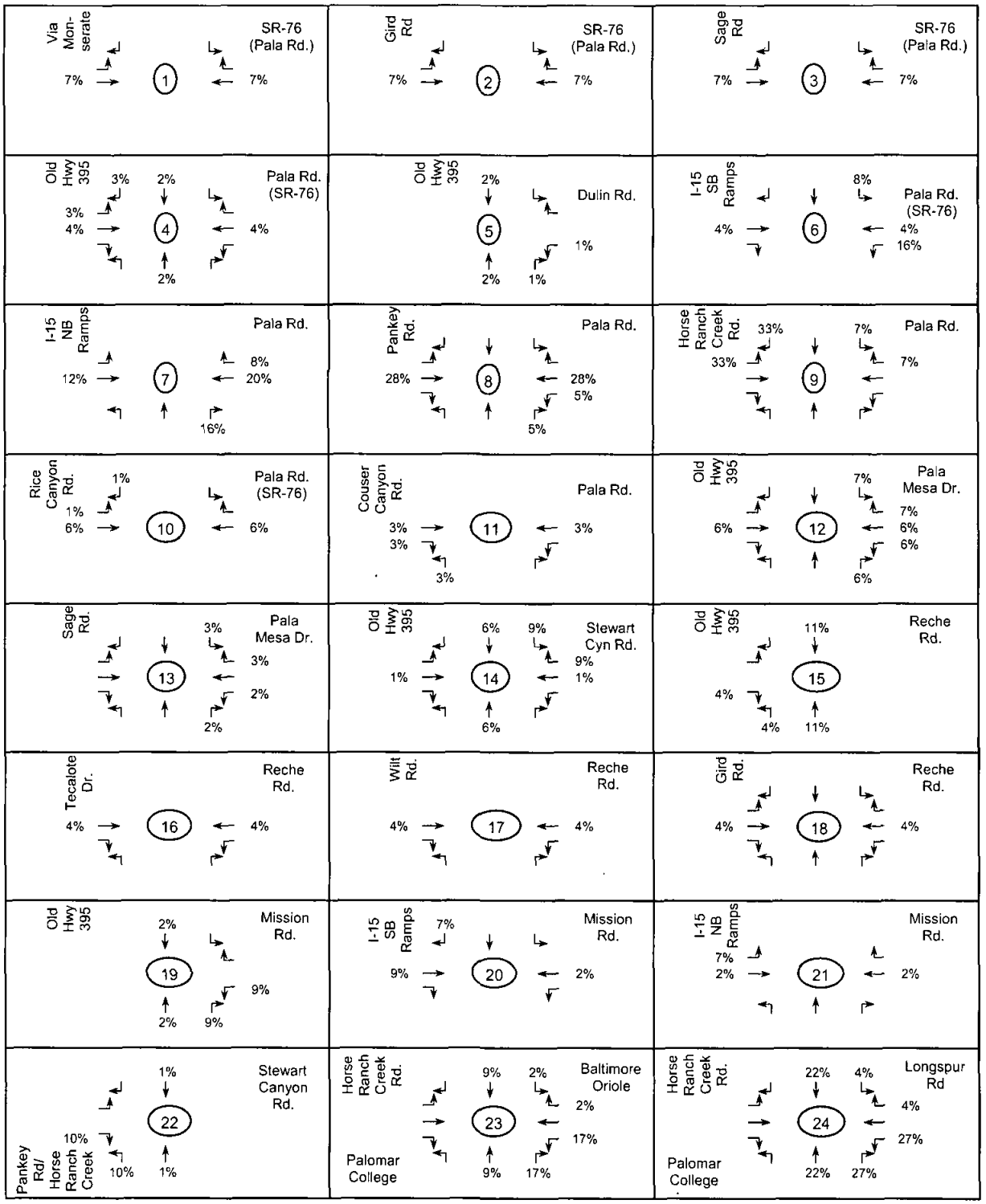
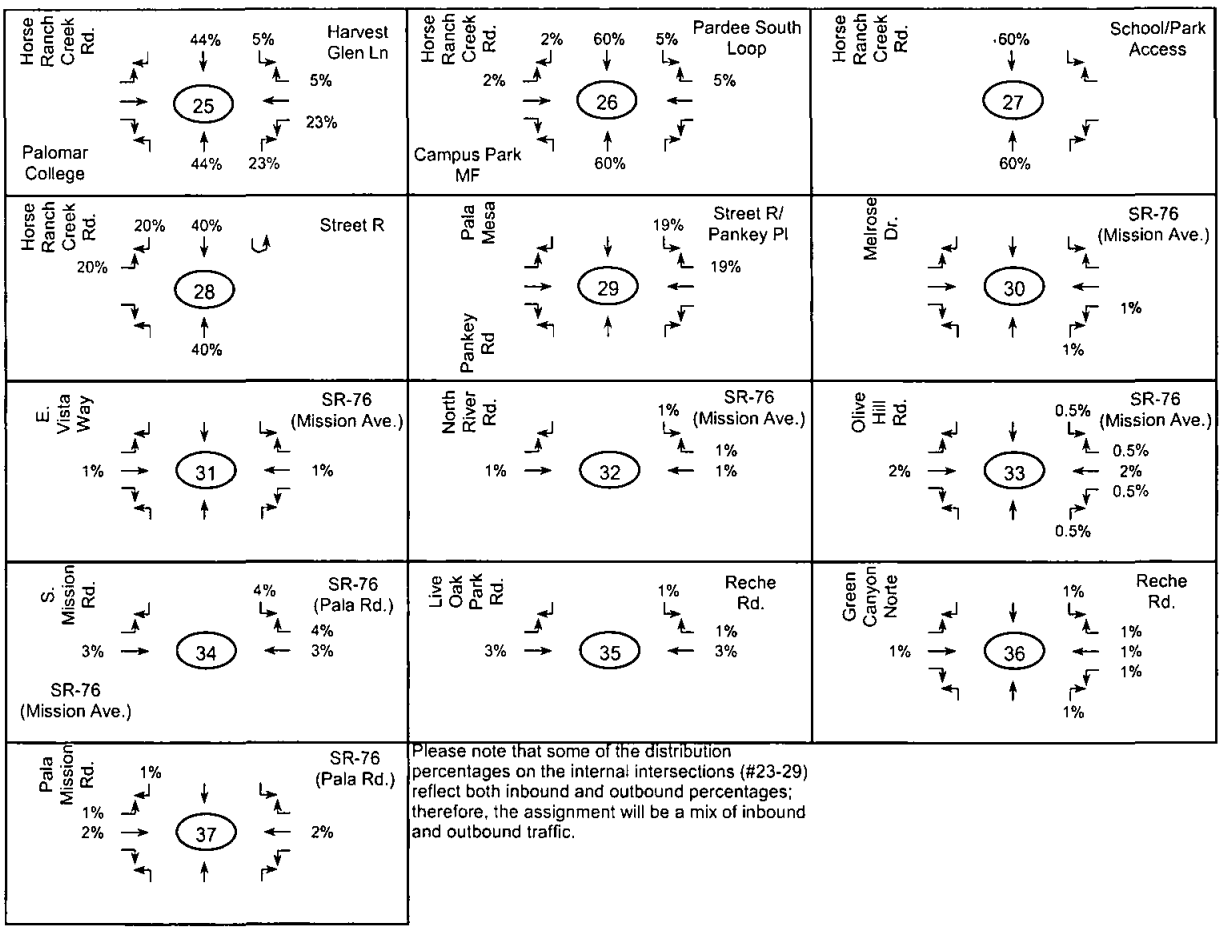


Figure 9c: Near-Term Commercial Distribution (30% Internal Capture Rate)



Please note that some of the distribution percentages on the internal intersections (#23-29) reflect both inbound and outbound percentages; therefore, the assignment will be a mix of inbound and outbound traffic.

Figure 10a: Near-Term Commercial Assignment (30% Internal Capture Rate)

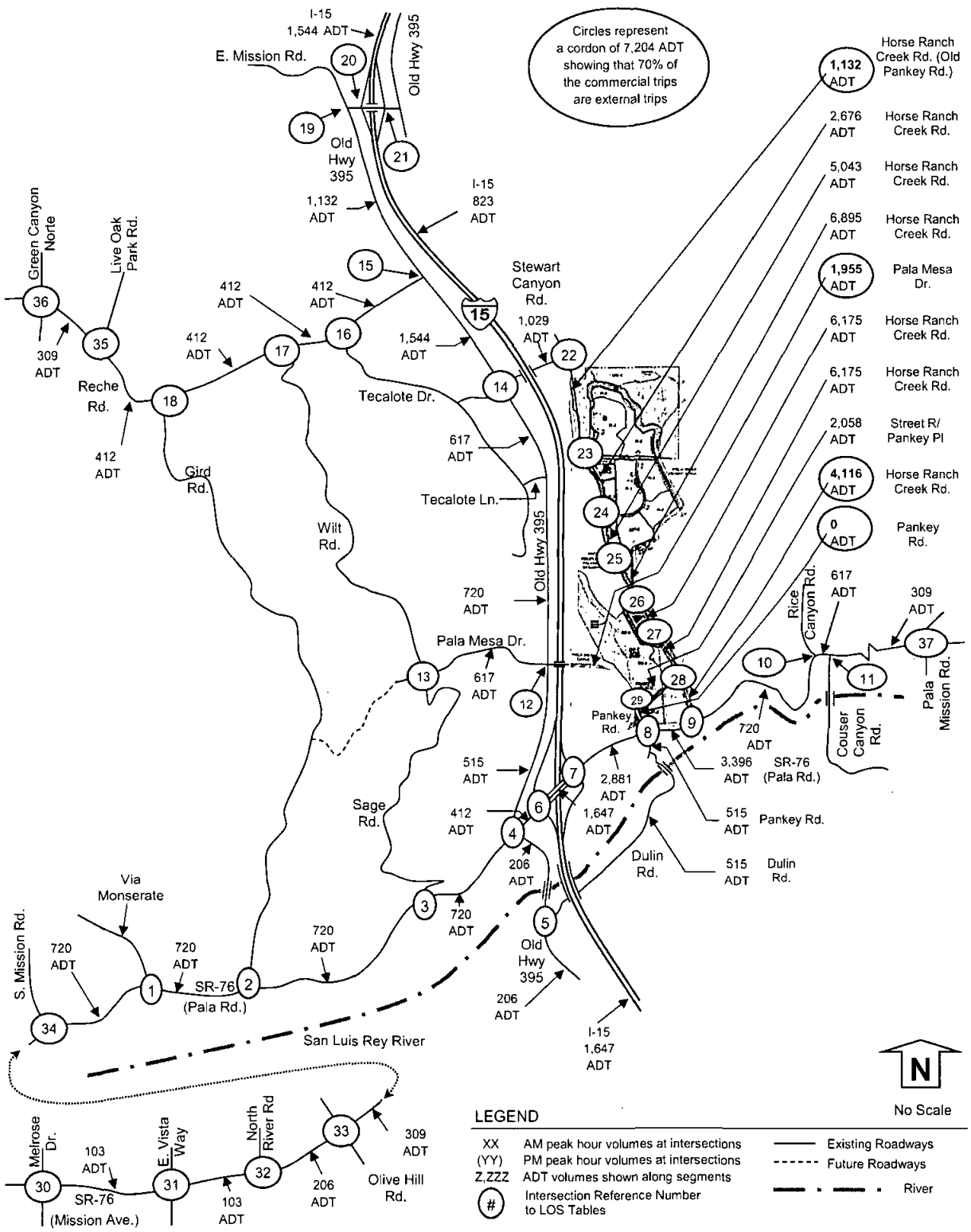


Figure 10b: Near-Term Commercial Assignment (30% Internal Capture Rate)

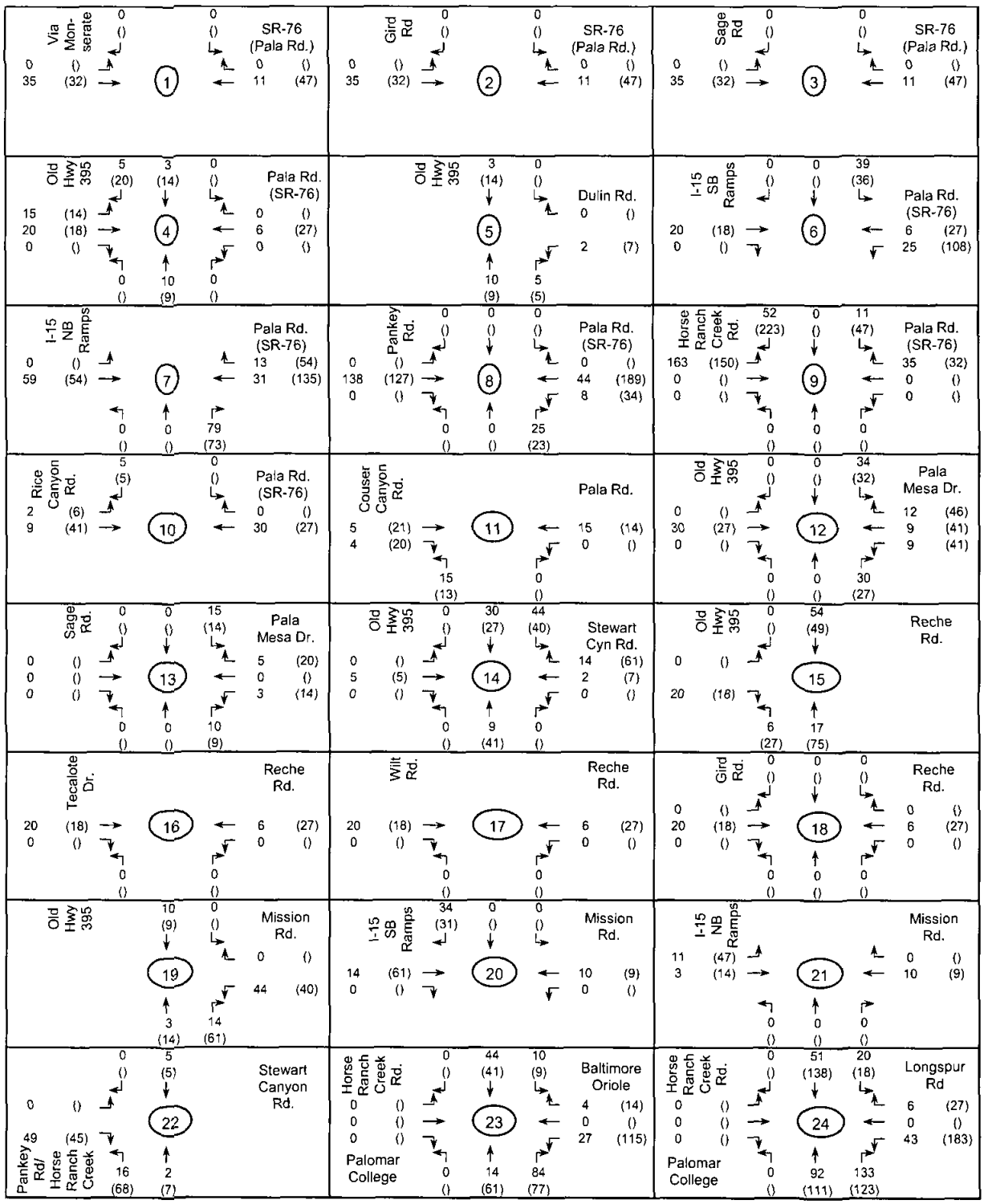


Figure 10c: Near-Term Commercial Assignment (30% Internal Capture Rate)

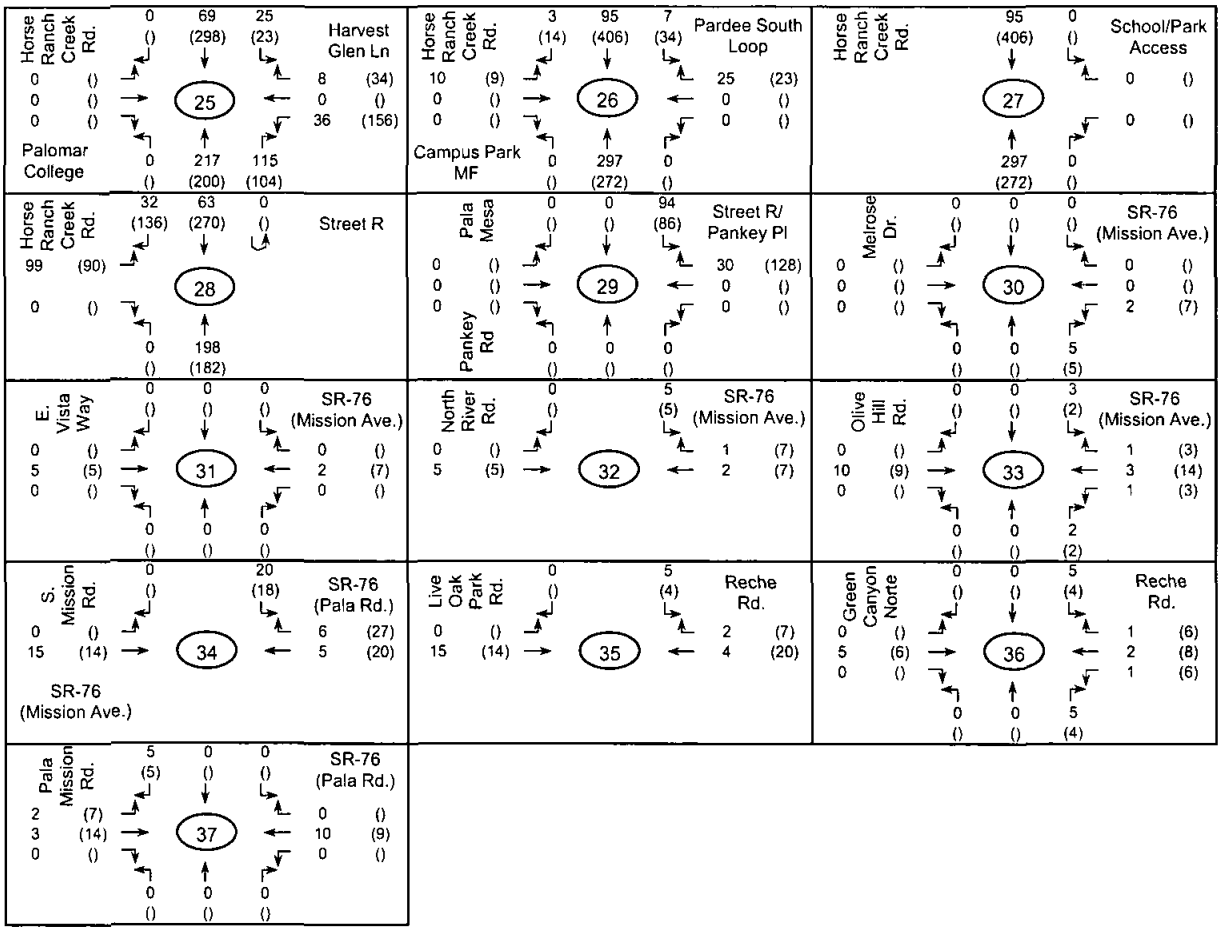


Figure 11a: Near-Term Residential and Commercial Assignment (30% Internal Capture Rate)

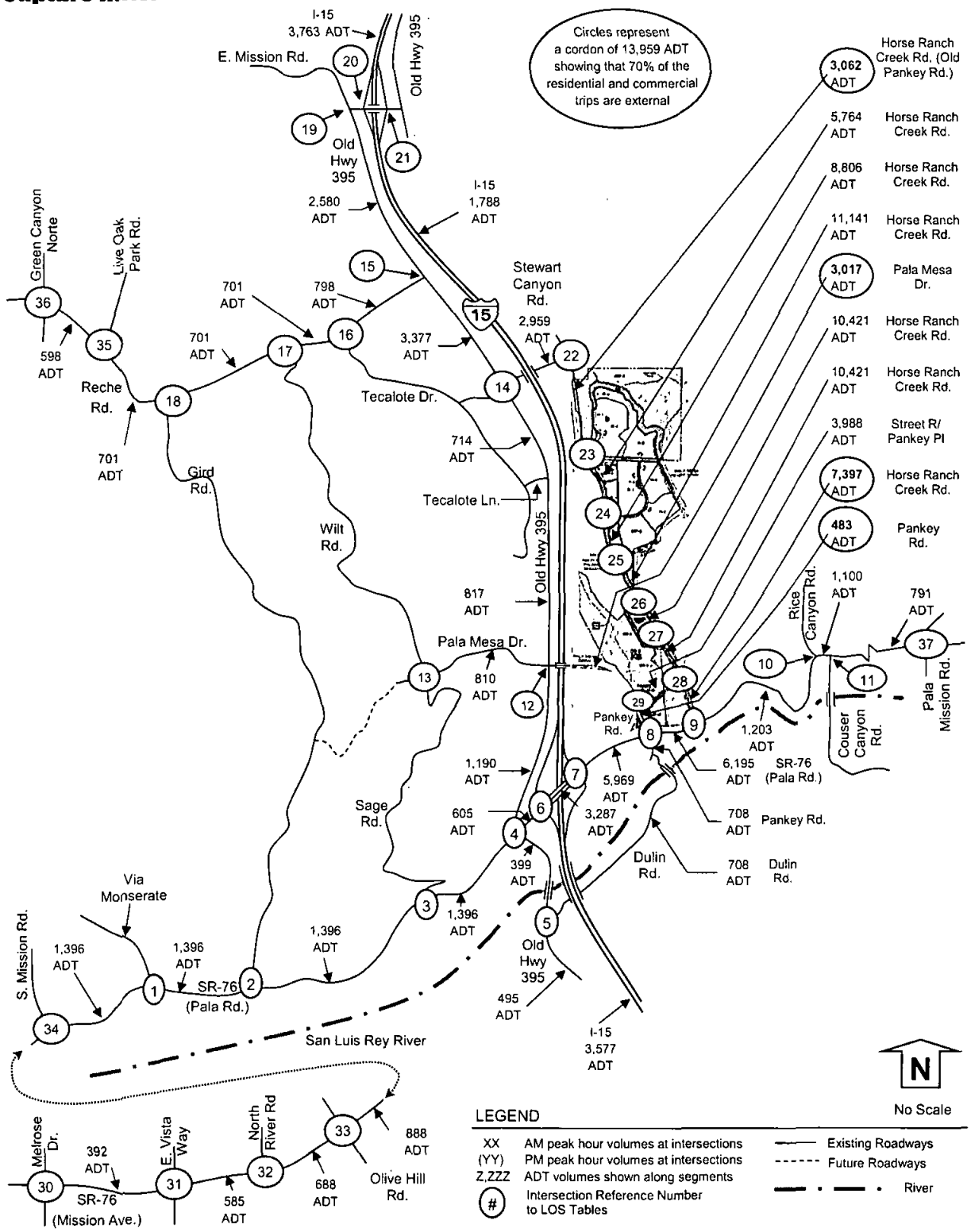


Figure 11b: Near-Term Residential and Commercial Assignment (30% Internal Capture Rate)

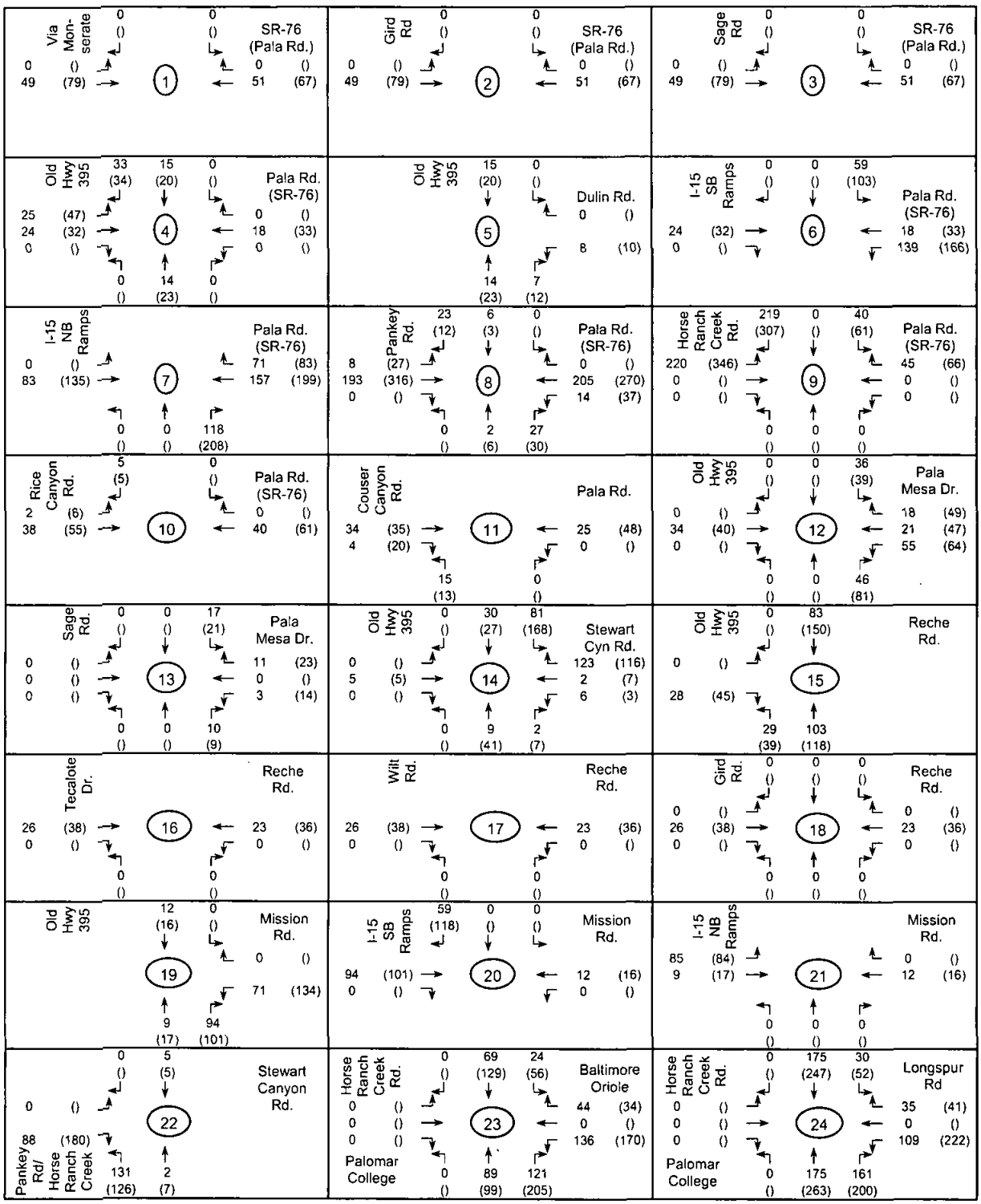


Figure 11c: Near-Term Residential and Commercial Assignment (30% Internal Capture Rate)

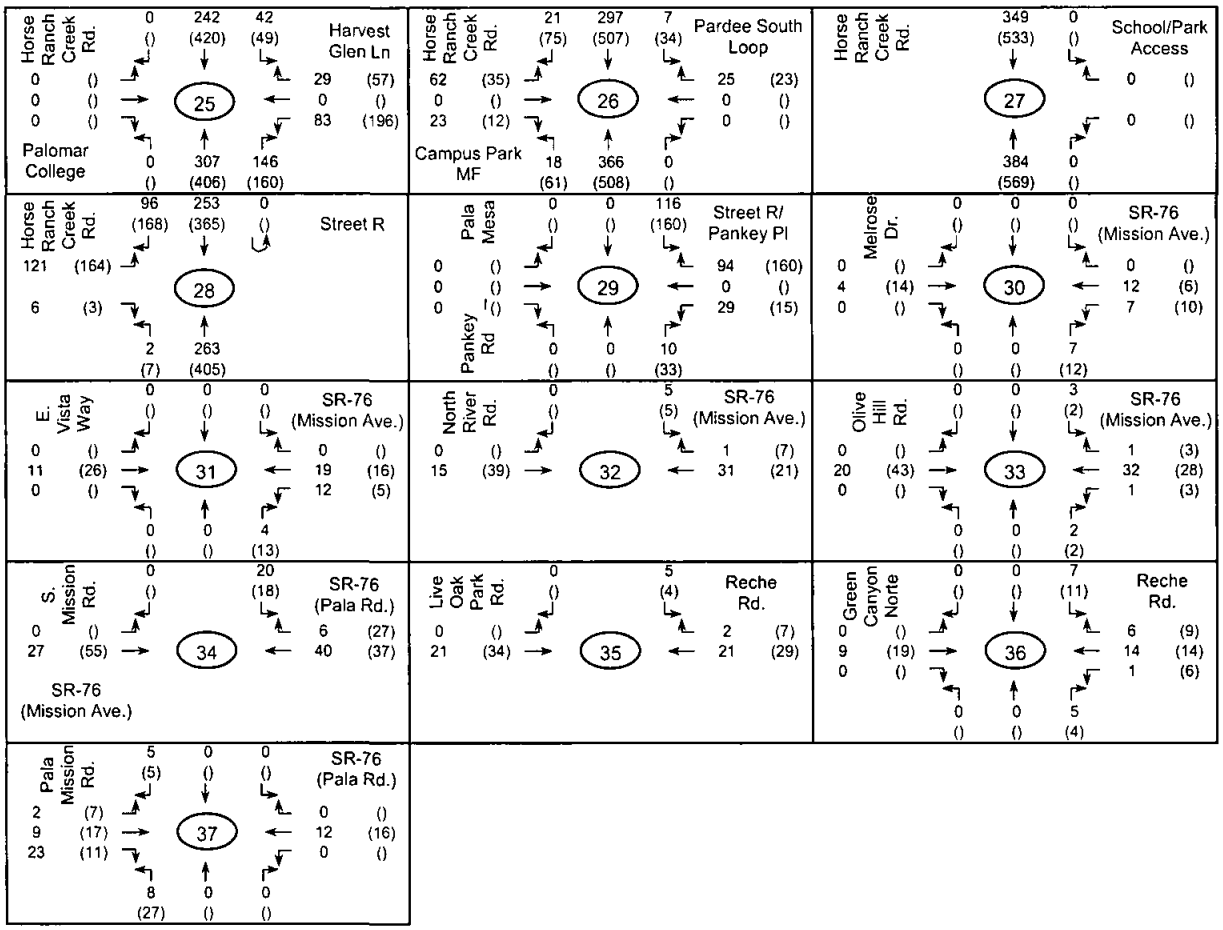


Figure 12a: Long-Term Residential Distribution (30% Internal Capture Rate)

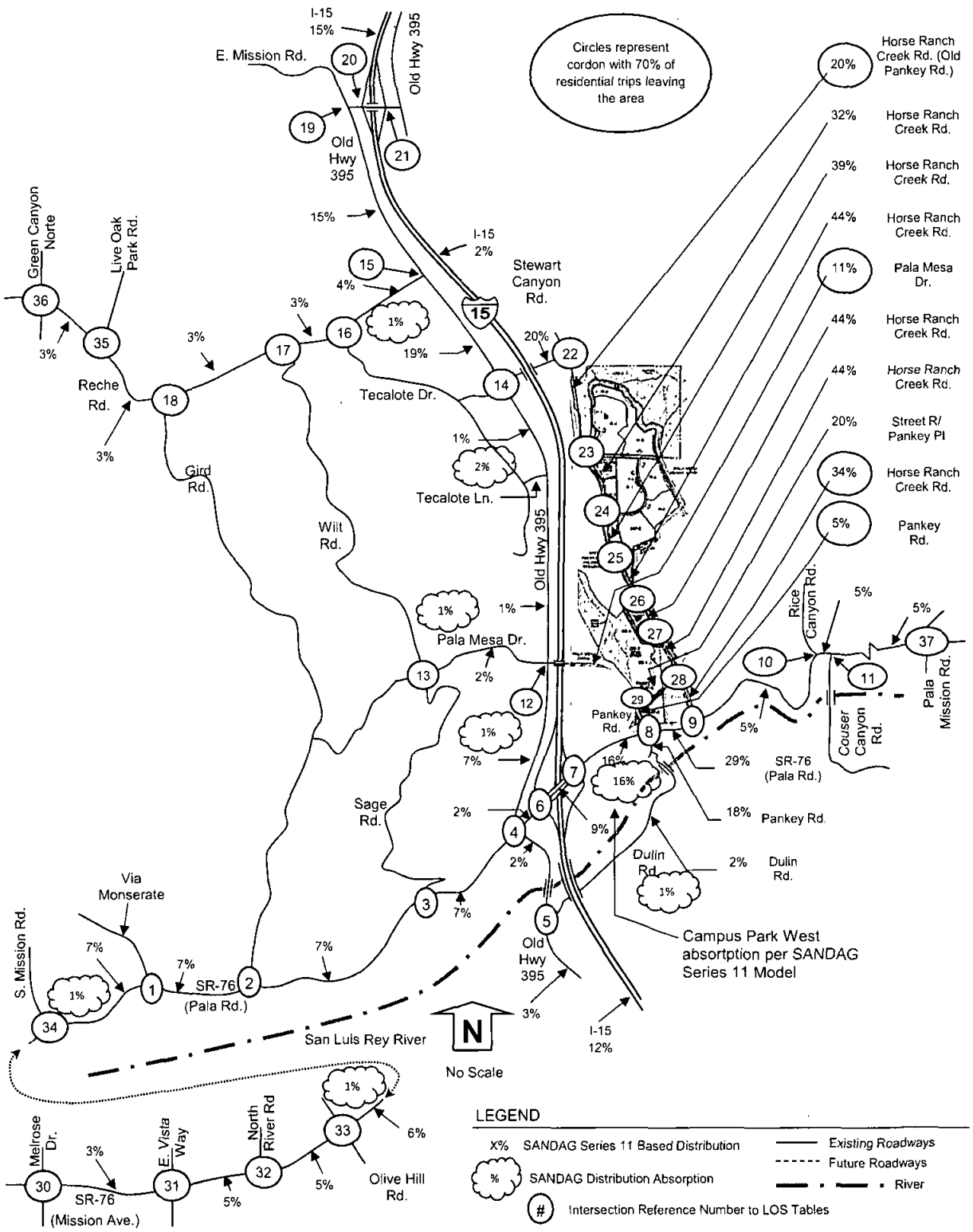


Figure 12b: Long-Term Residential Distribution (30% Internal Capture Rate)

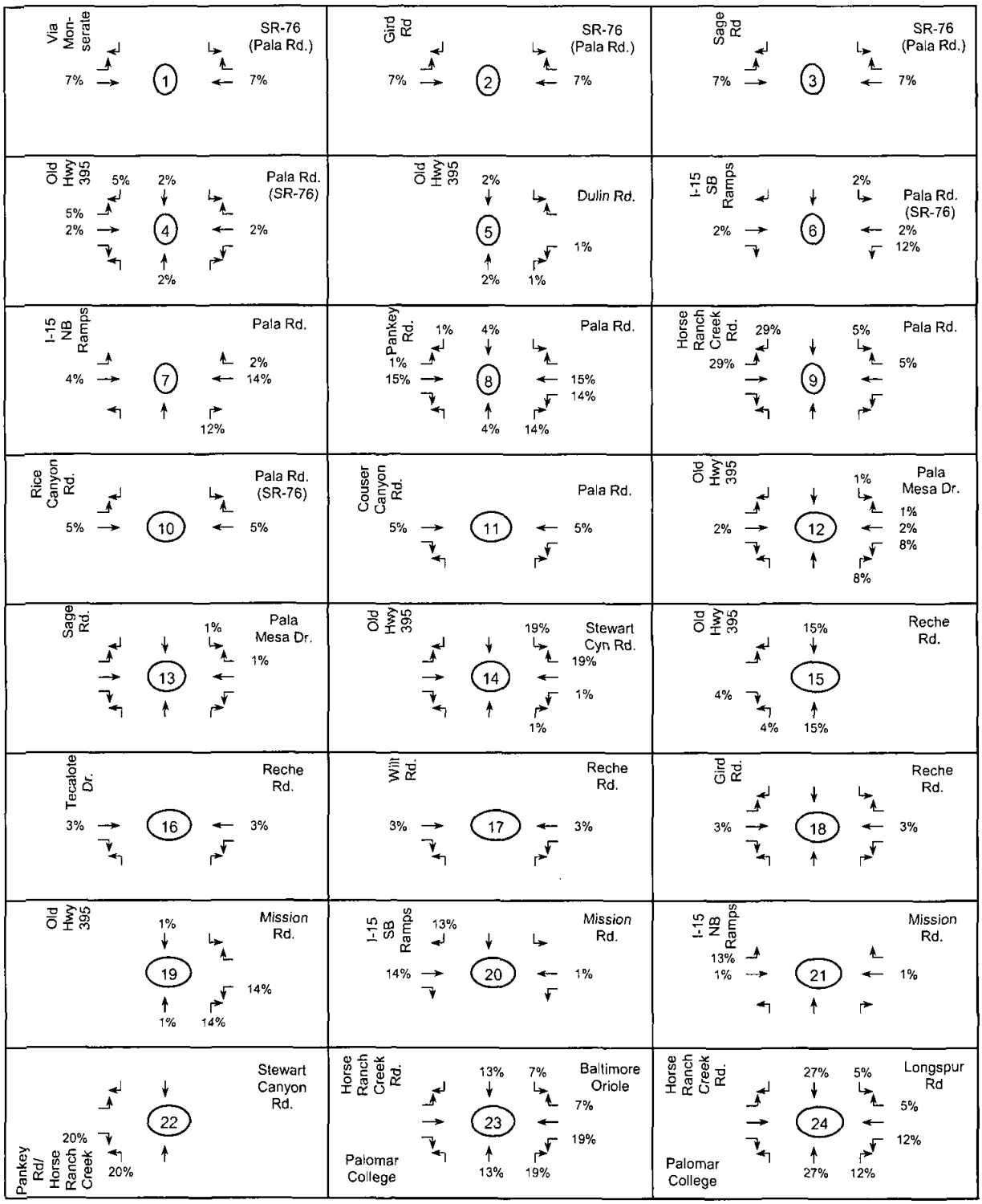
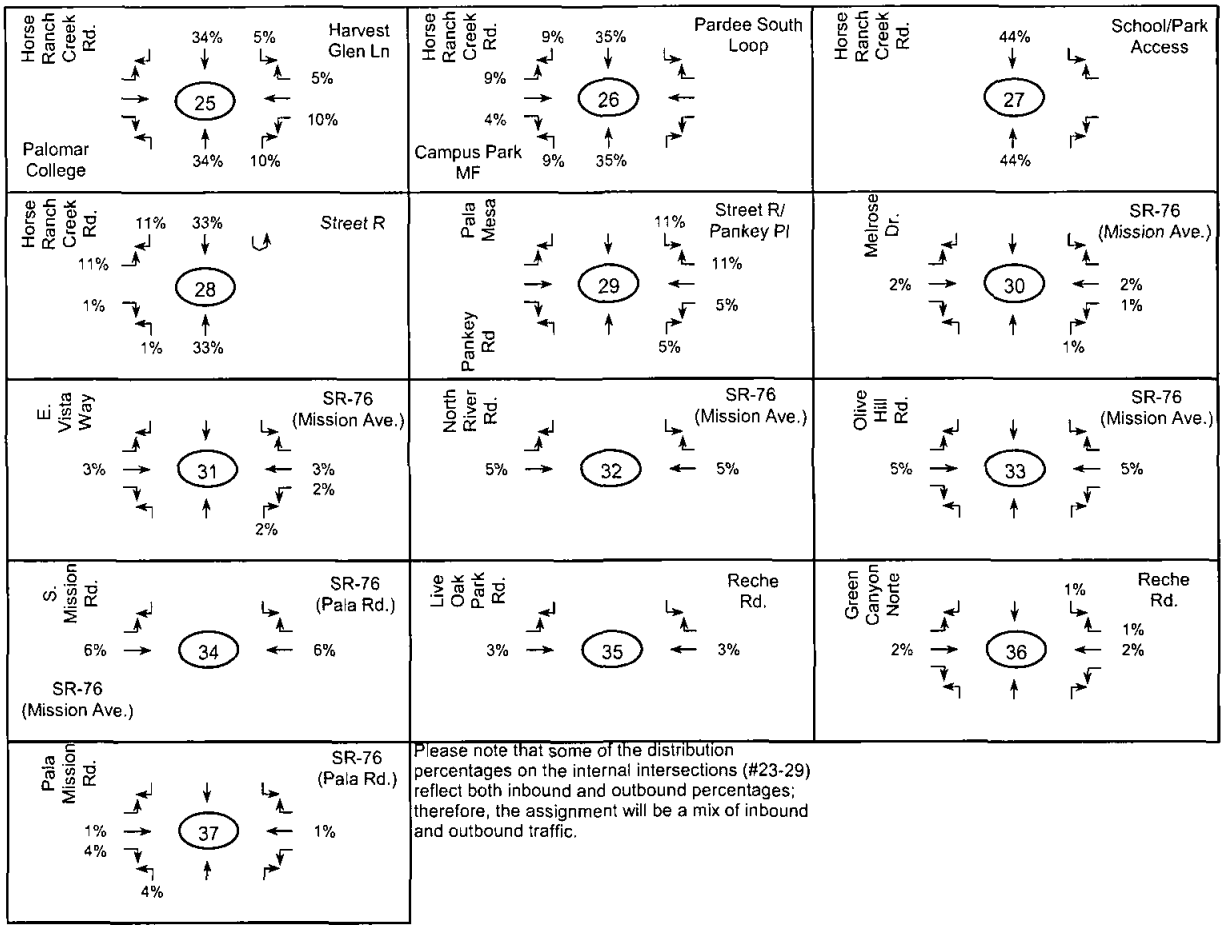


Figure 12c: Long-Term Residential Distribution (30% Internal Capture Rate)



Please note that some of the distribution percentages on the internal intersections (#23-29) reflect both inbound and outbound percentages; therefore, the assignment will be a mix of inbound and outbound traffic.

Figure 13a: Long-Term Residential Assignment (30% Internal Capture Rate)

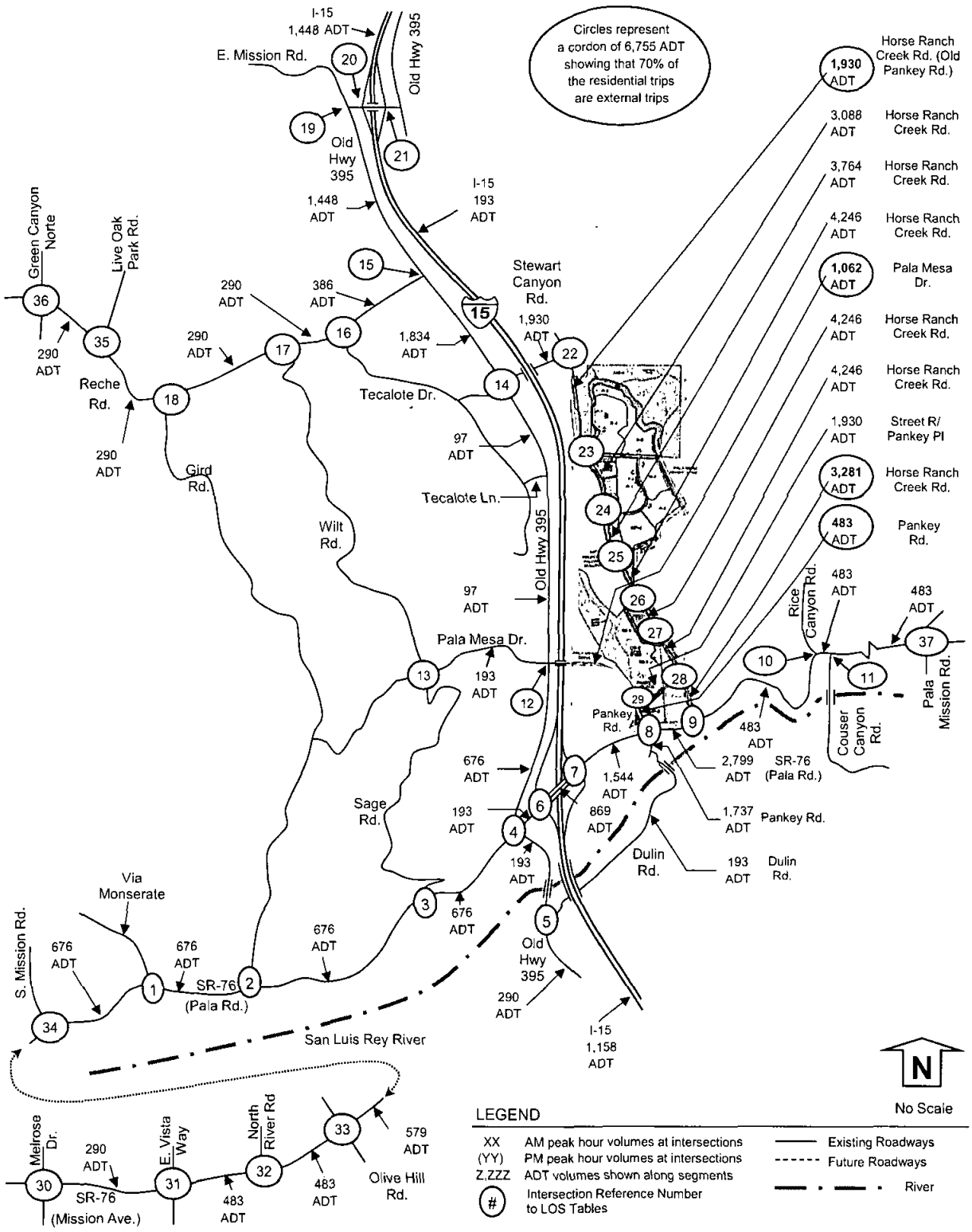


Figure 13b: Long-Term Residential Assignment (30% Internal Capture Rate)

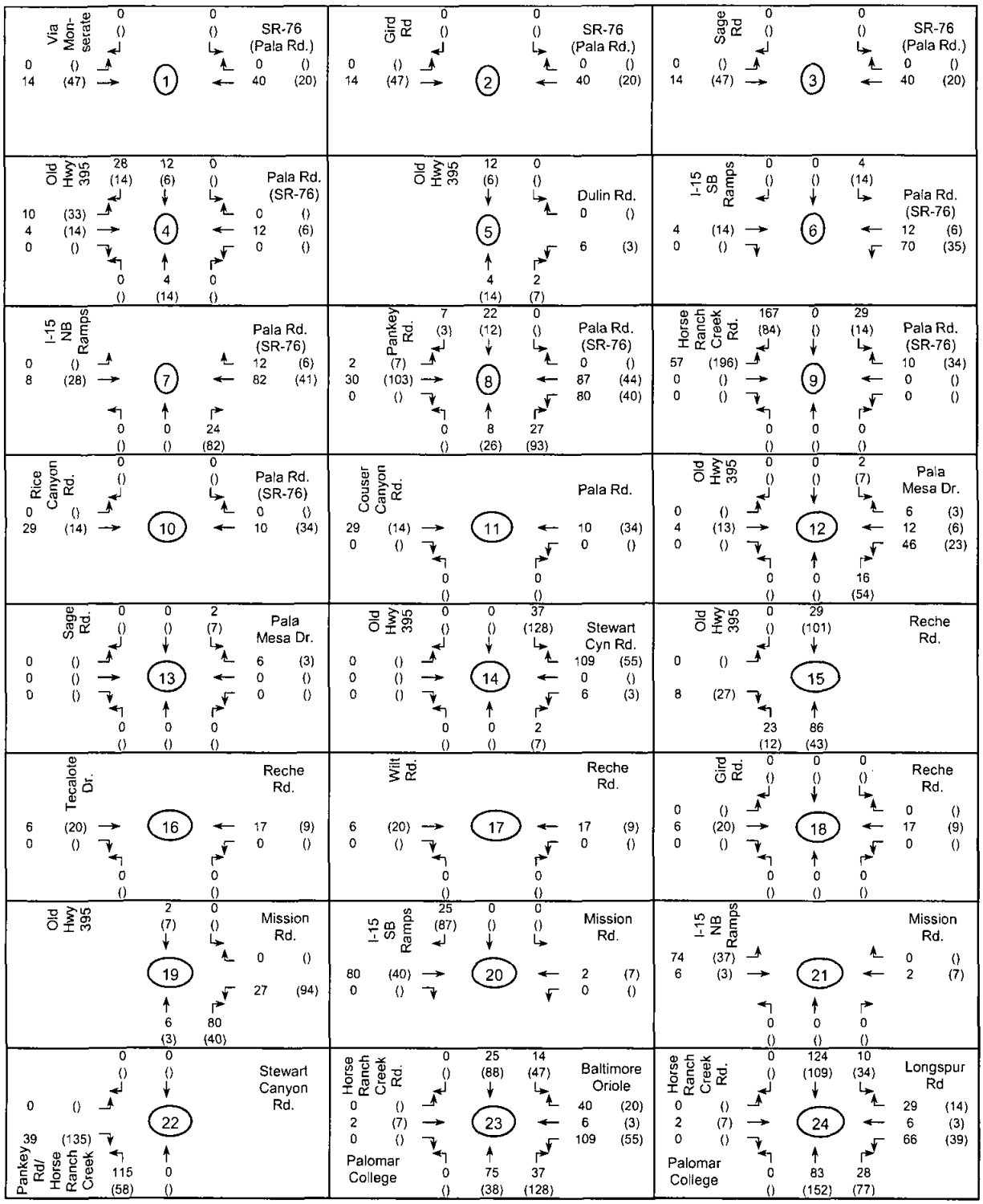


Figure 13c: Long-Term Residential Assignment (30% Internal Capture Rate)

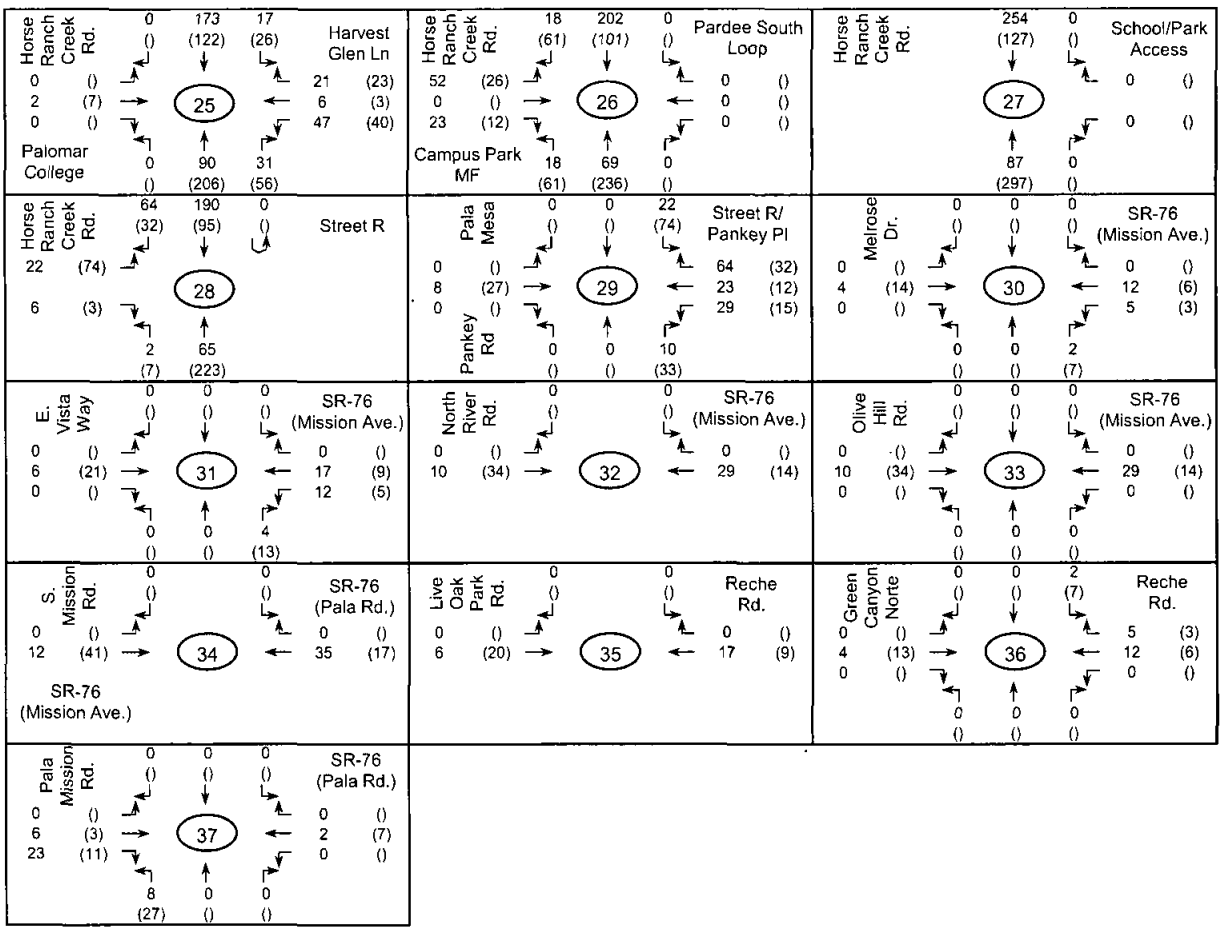


Figure 14a: Long-Term Commercial Distribution (30% Internal Capture Rate)

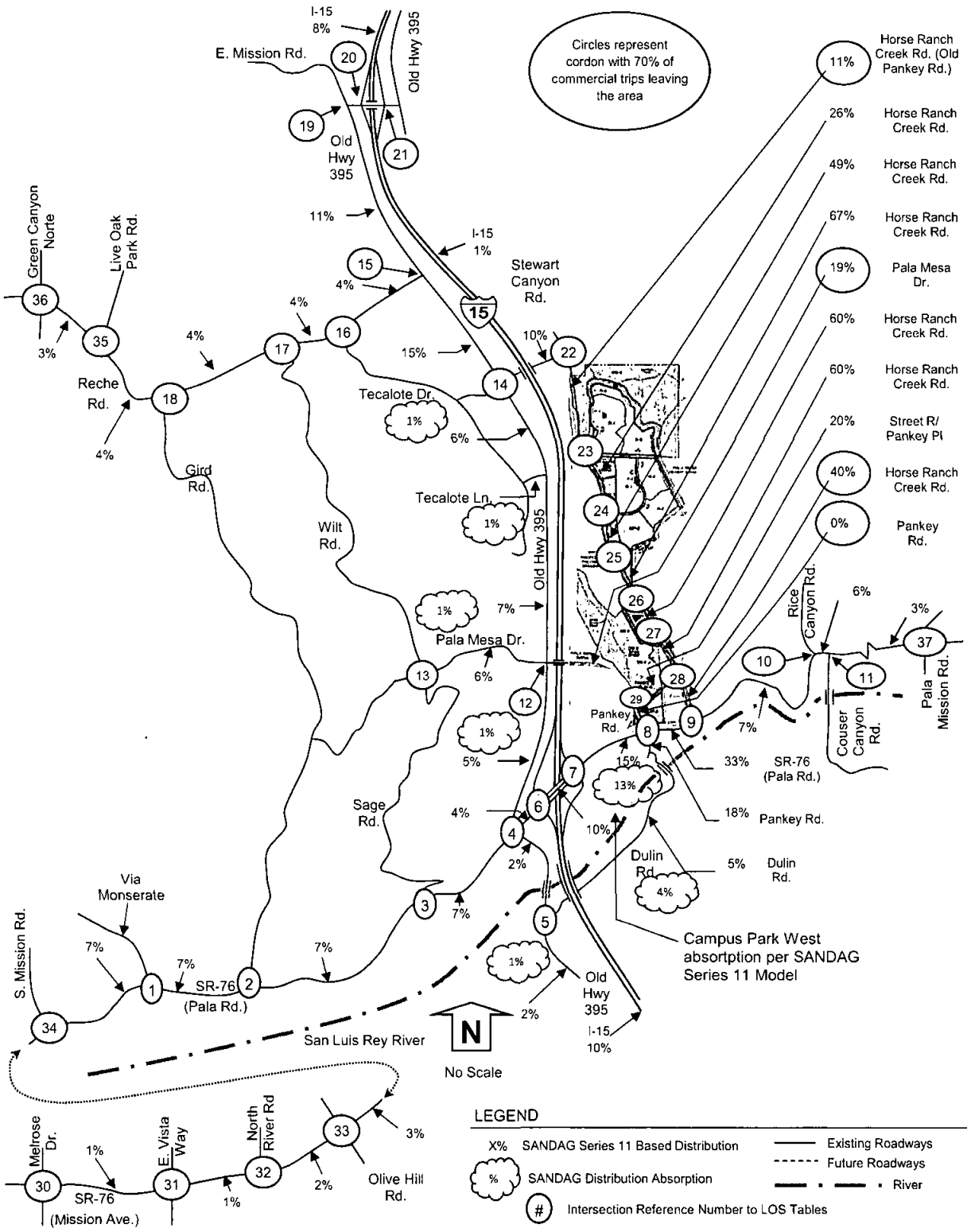


Figure 14b: Long-Term Commercial Distribution (30% Internal Capture Rate)

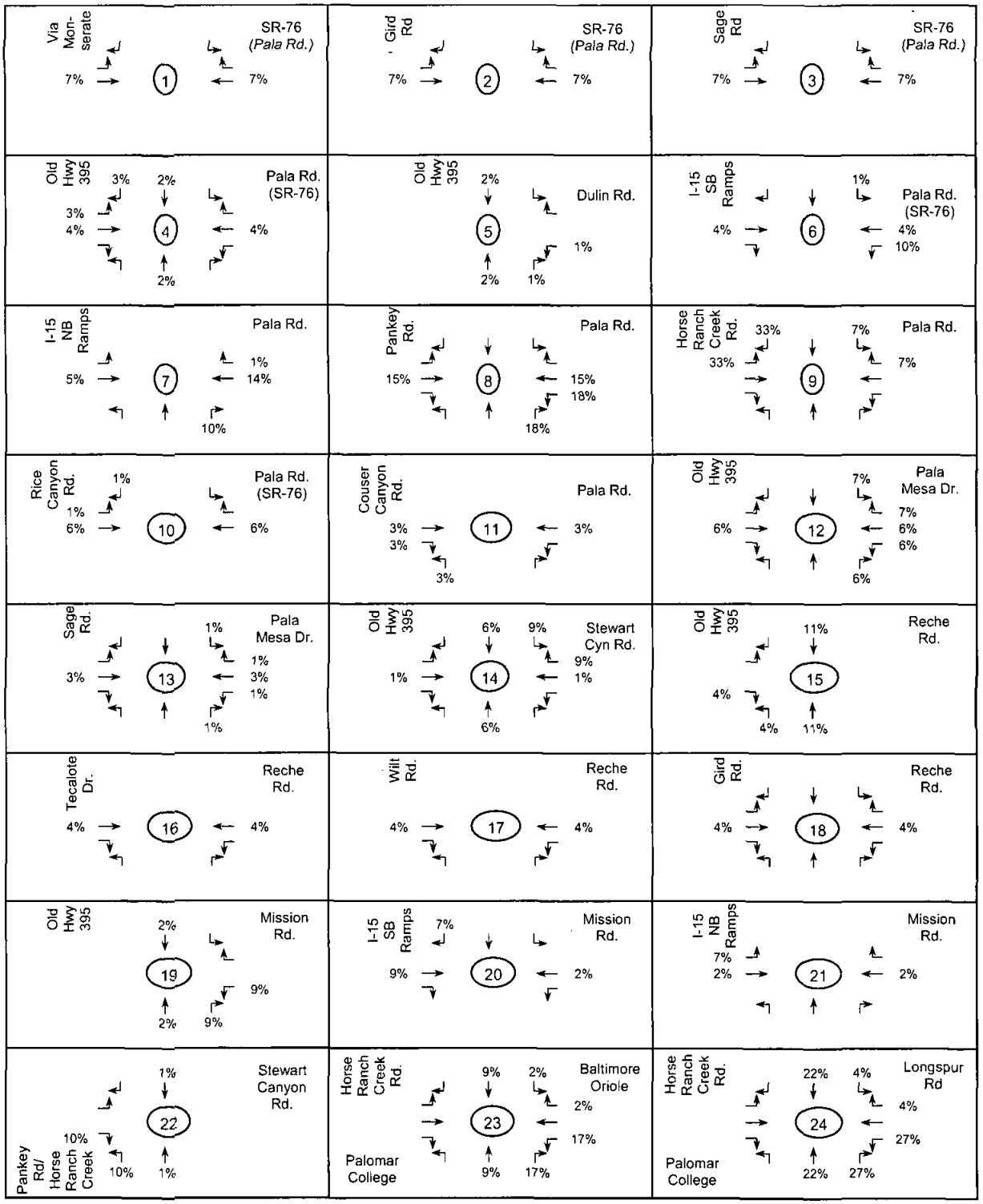


Figure 14c: Long-Term Commercial Distribution (30% Internal Capture Rate)

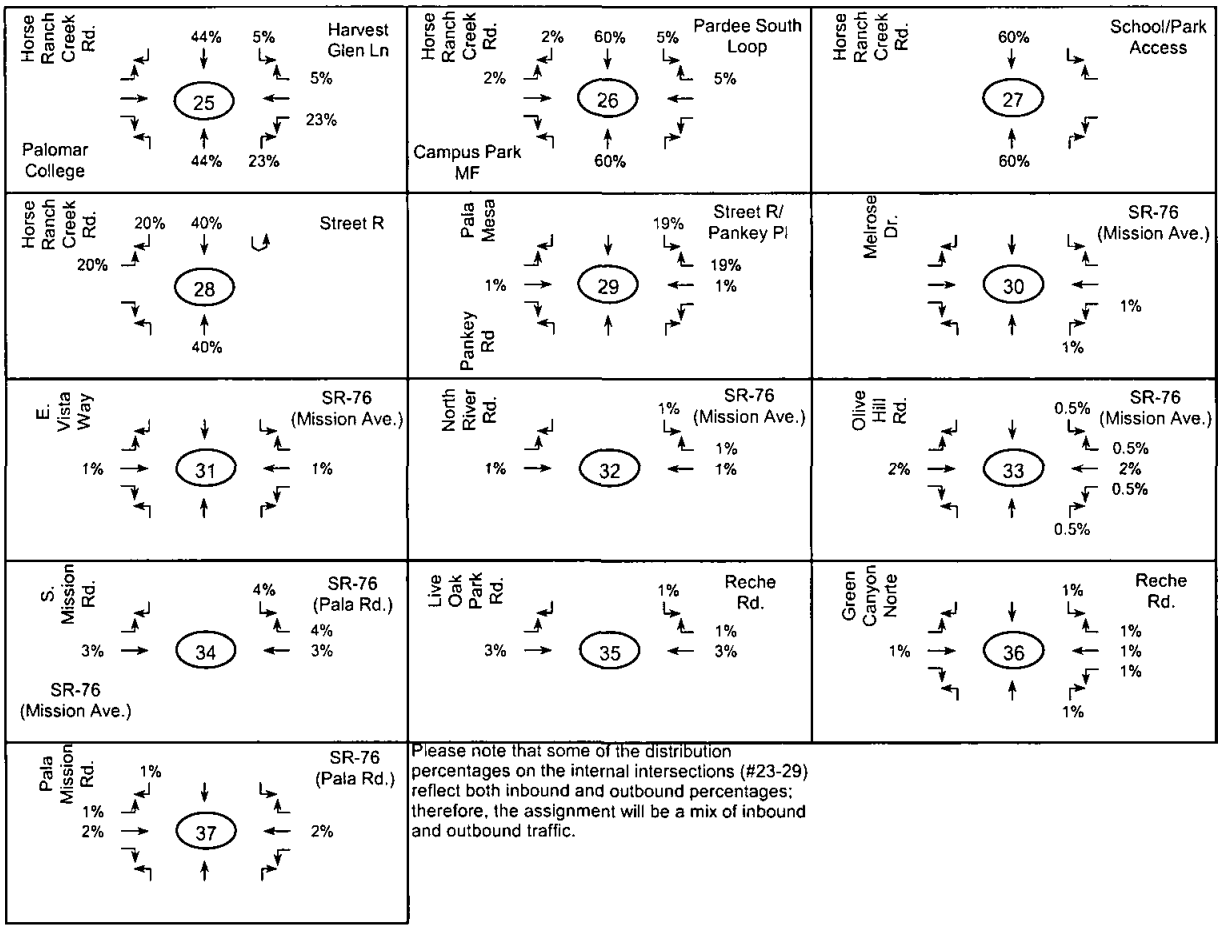


Figure 15a: Long-Term Commercial Assignment (30% Internal Capture Rate)

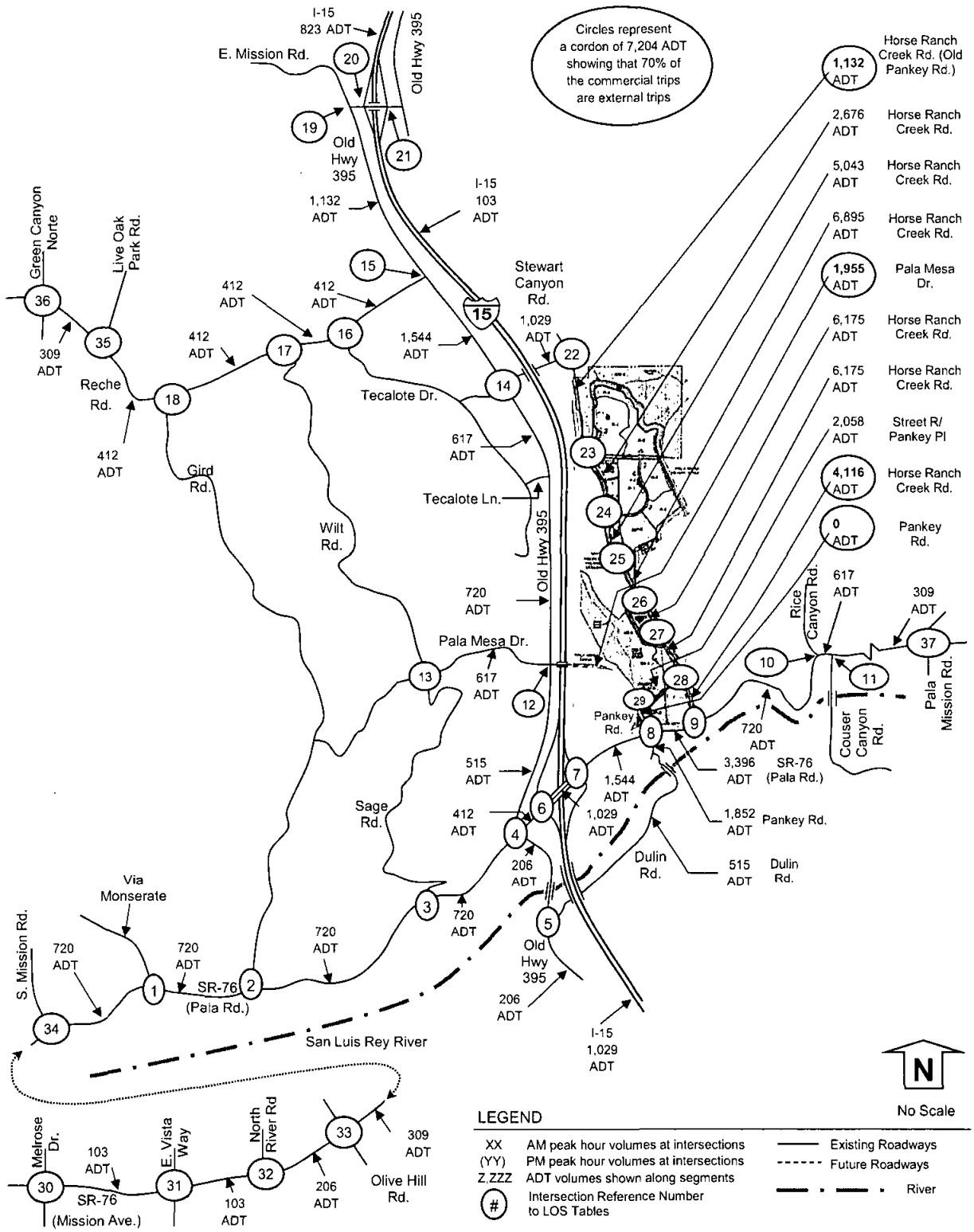


Figure 15b: Long-Term Commercial Assignment (30% Internal Capture Rate)

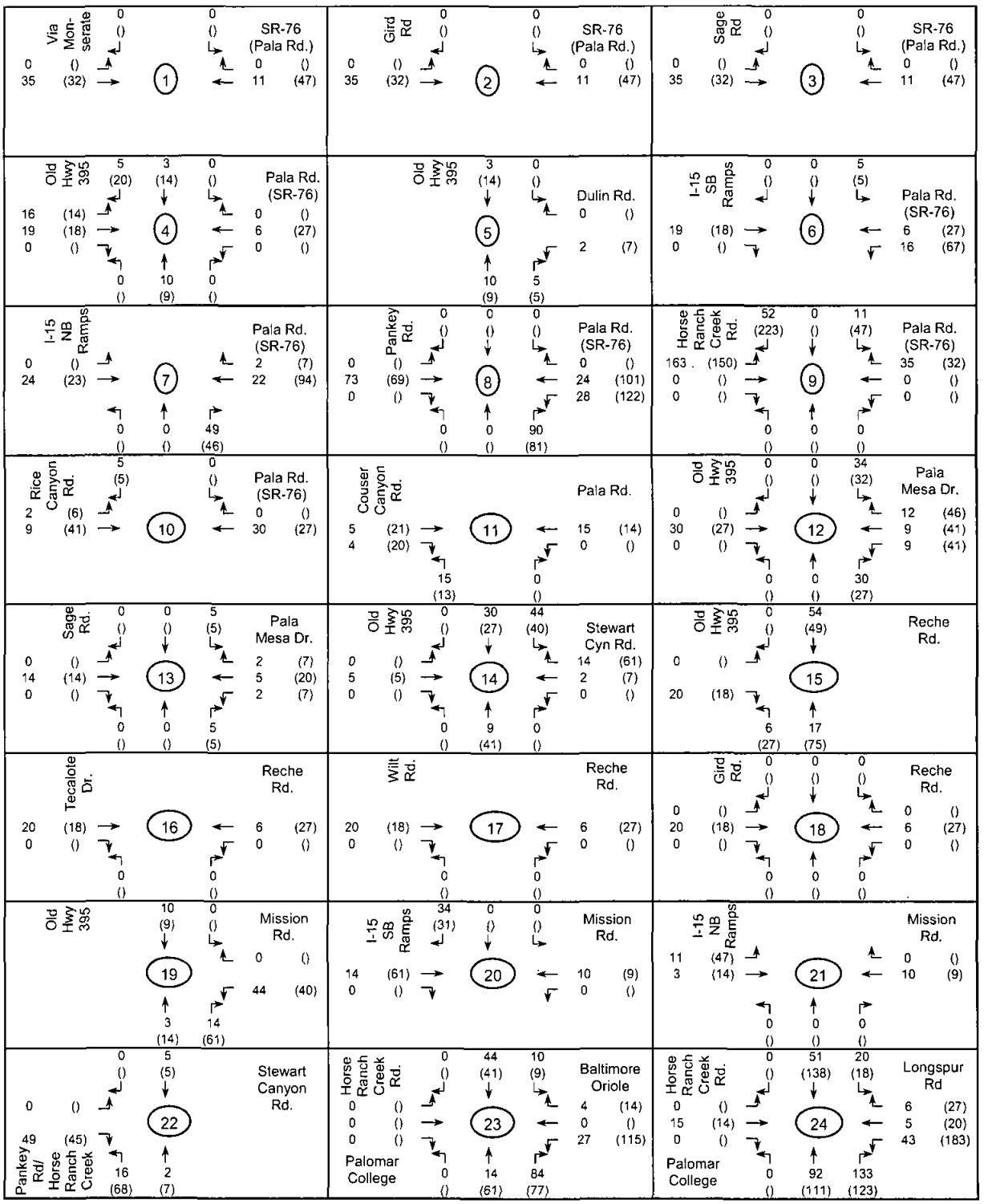


Figure 15c: Long-Term Commercial Assignment (30% Internal Capture Rate)

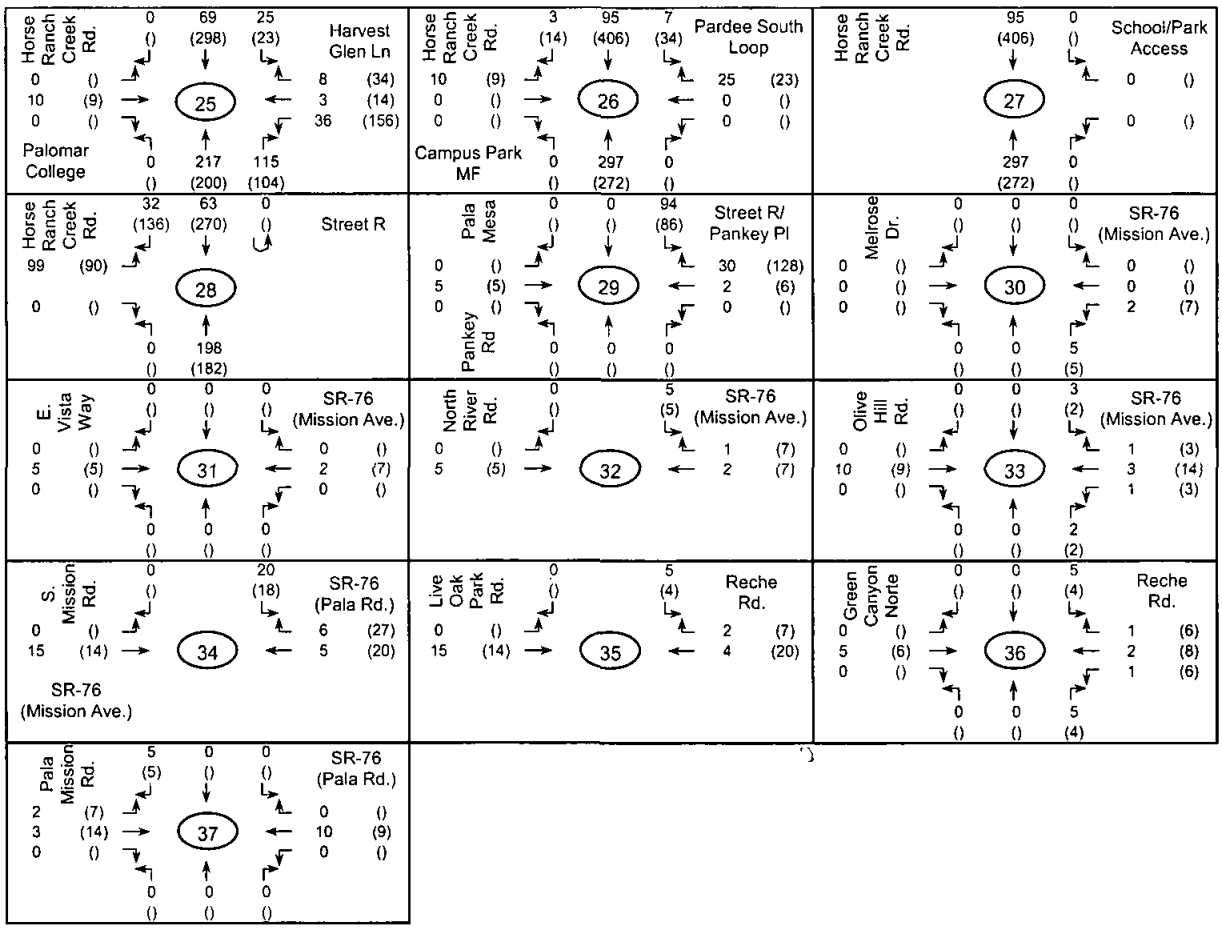


Figure 16a: Long-Term Residential and Commercial Assignment (30% Internal Capture Rate)

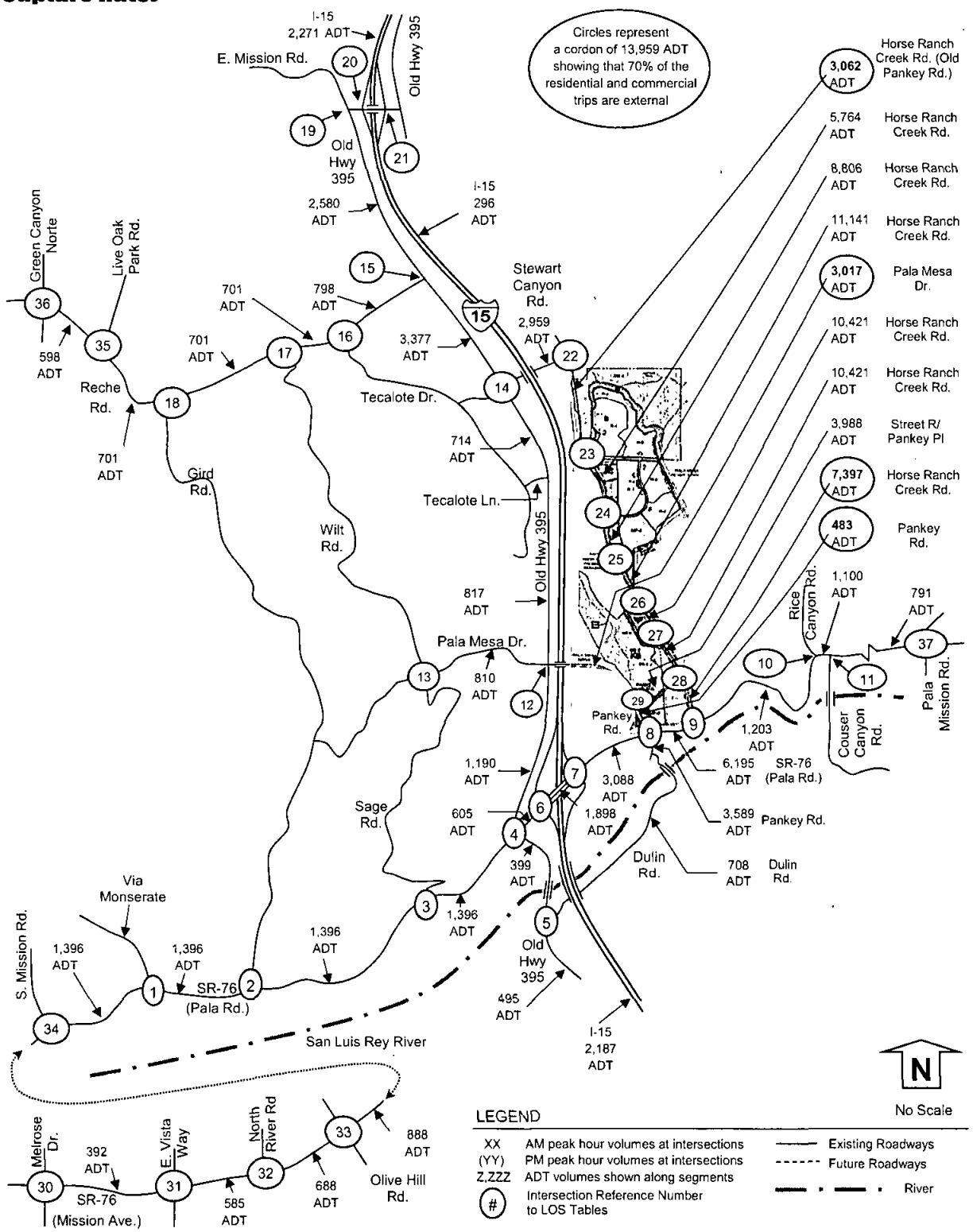


Figure 16b: Long-Term Residential and Commercial Assignment (30% Internal Capture Rate)

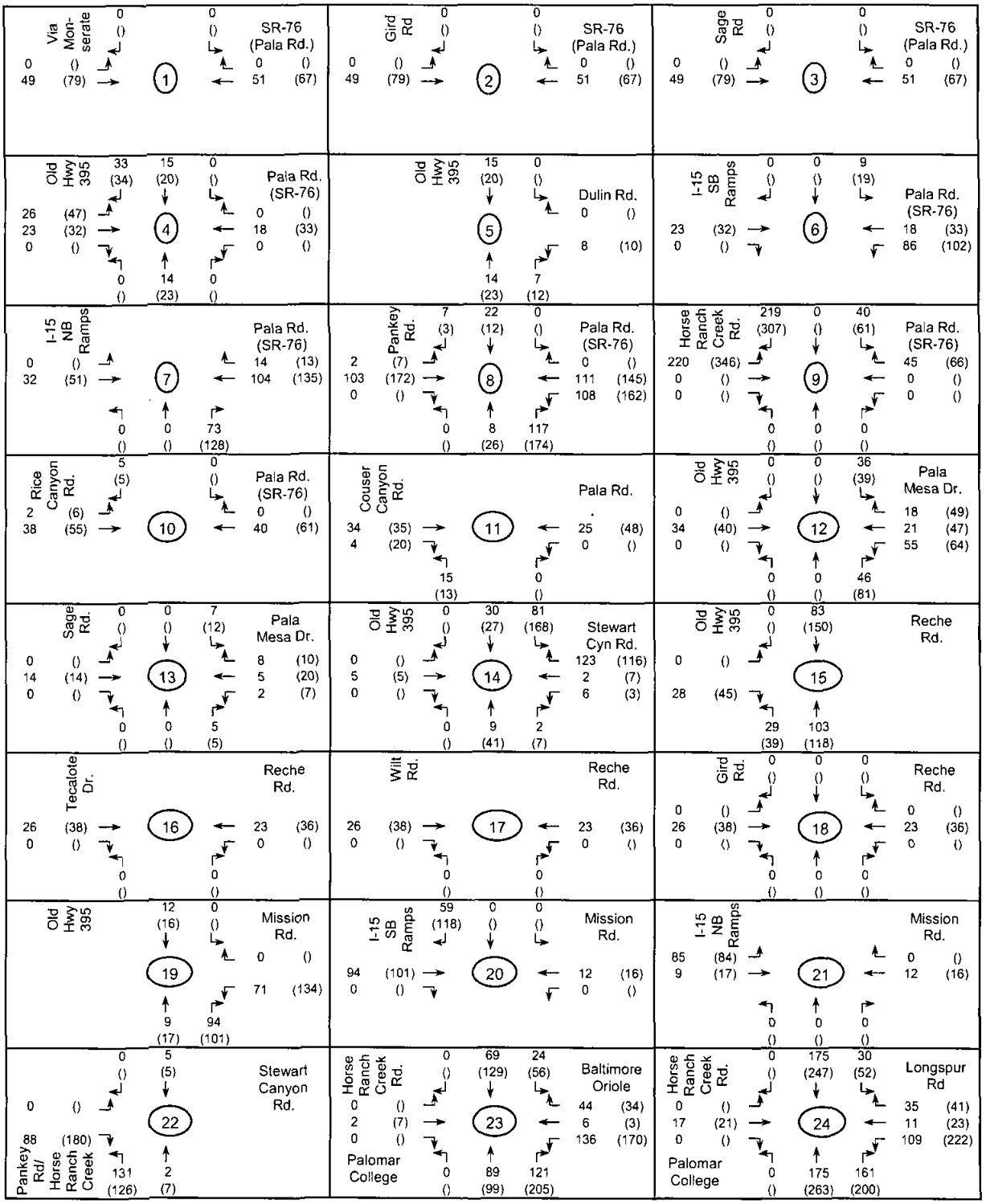
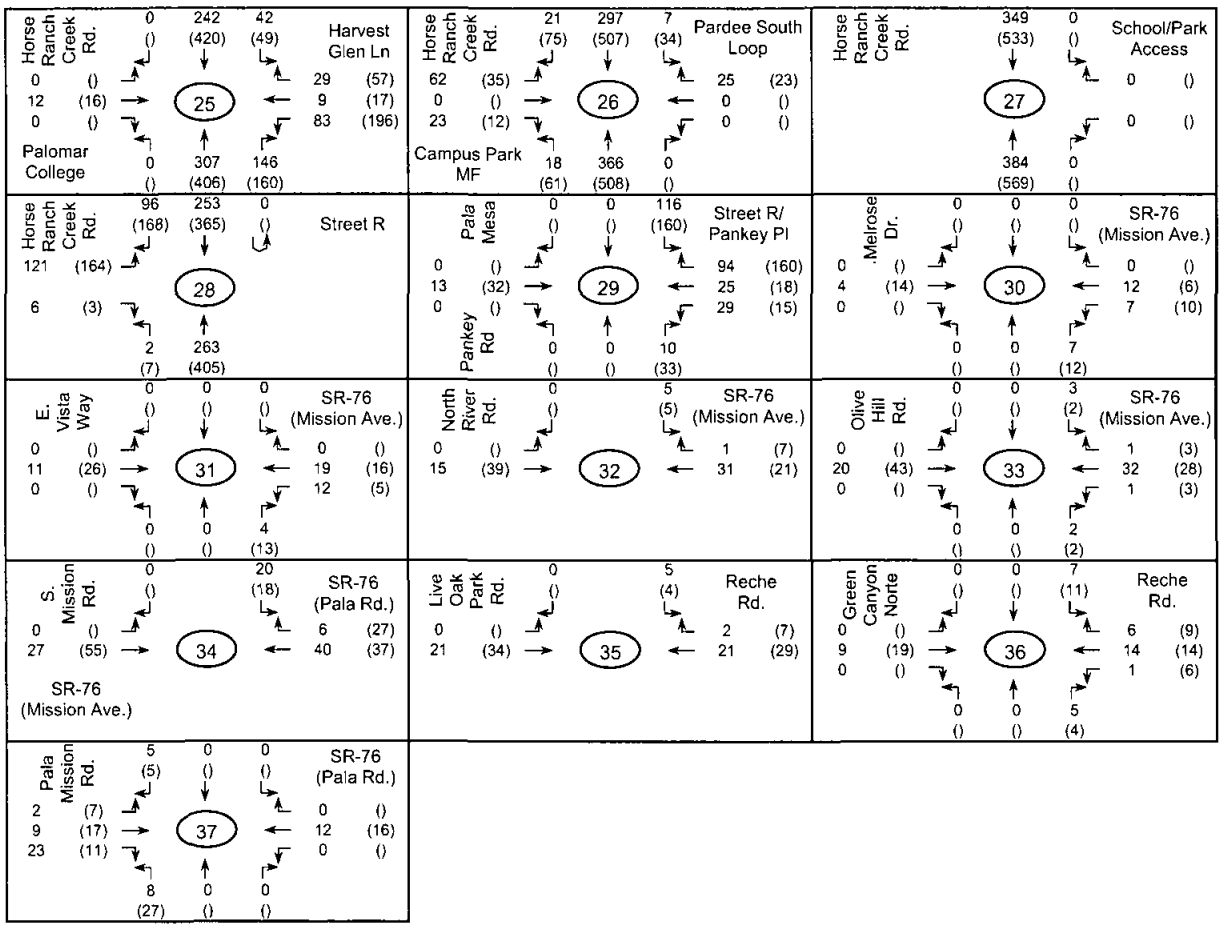


Figure 16c: Long-Term Residential and Commercial Assignment (30% Internal Capture Rate)



3.4 Existing + Project Conditions

This section will summarize the analysis for the addition of project traffic onto the existing background traffic for AM, PM and ADT conditions. The near-term project assignment is used in this scenario. The traffic analysis criteria are the same as outlined in Section 2.1.

If the Campus Park applicant is first to proceed (between Meadowood and Palomar College), then the applicant will construct the following: Horse Ranch Creek Road from Pankey south of Stewart to SR-76; Pala Mesa Drive from Old Highway 395 to SR-76; Pankey Place (AKA Street R) from Pala Mesa Drive to Horse Ranch Creek Road, and intersections #9, 23, 24, 25, 26, 28, and 29 (additional details in Section 5.4). Additionally, SR-76 from I-15 easterly a distance of approximately 1.4 miles is currently being widened from 2 to 4 lanes (pictures included in Appendix D). Because this improvement is anticipated to be completed before Campus Park will reach occupancy, SR-76 from I-15 to Horse Ranch Creek Road was analyzed as 4 lanes under existing + project conditions. The proposed improvements by the applicant if first to proceed, as used in this existing + project analysis are shown in **Figures 17a, 17b, and 17c**.

The applicant proposes to construct Horse Ranch Creek Road per General Plan Update Circulation Element "Boulevard" standards and has submitted a request for a modification to a road standard under separate cover. Therefore, the segment operations shown in Table 12 reflect a Boulevard threshold capacity for Horse Ranch Creek Road with analysis as either under capacity or over capacity. The operation capacity is limited to this under or over capacity because the GP Update Circulation Element has yet to be adopted. Horse Ranch Creek Road will create a new intersection with SR-76 at station 984+67 $\pm$ to which Caltrans has agreed with the proposed location and has indicated such in a letter dated January 11, 2007. A copy of the proposed GP Update Circulation Element Standards for a Boulevard and a copy of the Caltrans letter accepting the Horse Ranch Creek Road intersection location at SR-76 are included in **Appendix J**.

The northern portion of Horse Ranch Creek Road will connect to and transition from a Light Collector to a Boulevard at the intersection of Horse Ranch Creek Road and Baltimore Oriole (intersection #23). The geometric transition details are included on the Vesting Tentative Map; however, the overall transition works by restricting the northbound and southbound travel to one lane in each direction with as needed turn lanes. This intersection transition is shown at the end of Appendix H.

The peak hour intersection volumes and daily traffic volumes for this scenario of existing + project are shown in **Figures 18a, 18b, and 18c**. Please note that the study area is based on the County of San Diego criteria of where the project will add 50 or more peak-hour trips in either direction to the existing roadway traffic. This means that intersections 5, 13, 16, 17, 18, 30, 31, 32, 33, 35, 36, 37 and roadway segments of Dulin Road from Old Highway 395 to Pankey Road, Old Highway 395 from Stewart Canyon Road to Tecalote Lane, Old Highway 395 from SR-76 to W. Lilac Road, Reche Road from Green Canyon Norte to Old Highway 395, Pankey Road from SR-76 to Dulin Road, Pala Mesa Drive from Wilt Rd/Sage Rd to Old Highway 395, SR-76 from Melrose Drive to S. Mission Road, and SR-76 from Couser Canyon Road to Pala Mission Road are not analyzed under existing + project conditions because the project will add less than 50 peak-hour trips in either direction to these intersections and roadway segments. However, these aforementioned

intersections and segments are analyzed under cumulative conditions.

The LOS calculated for the study intersections, roadway segments, state route segments, and freeway segments are shown in **Tables 14, 15, 16a, 16b, and 17**, respectively. Horse Ranch Creek Road may be constructed in phases; therefore, the minimum number of lanes required with only Campus Park traffic was analyzed and shown in Table 15.

Figure 17a: Existing + Project Roadway Conditions

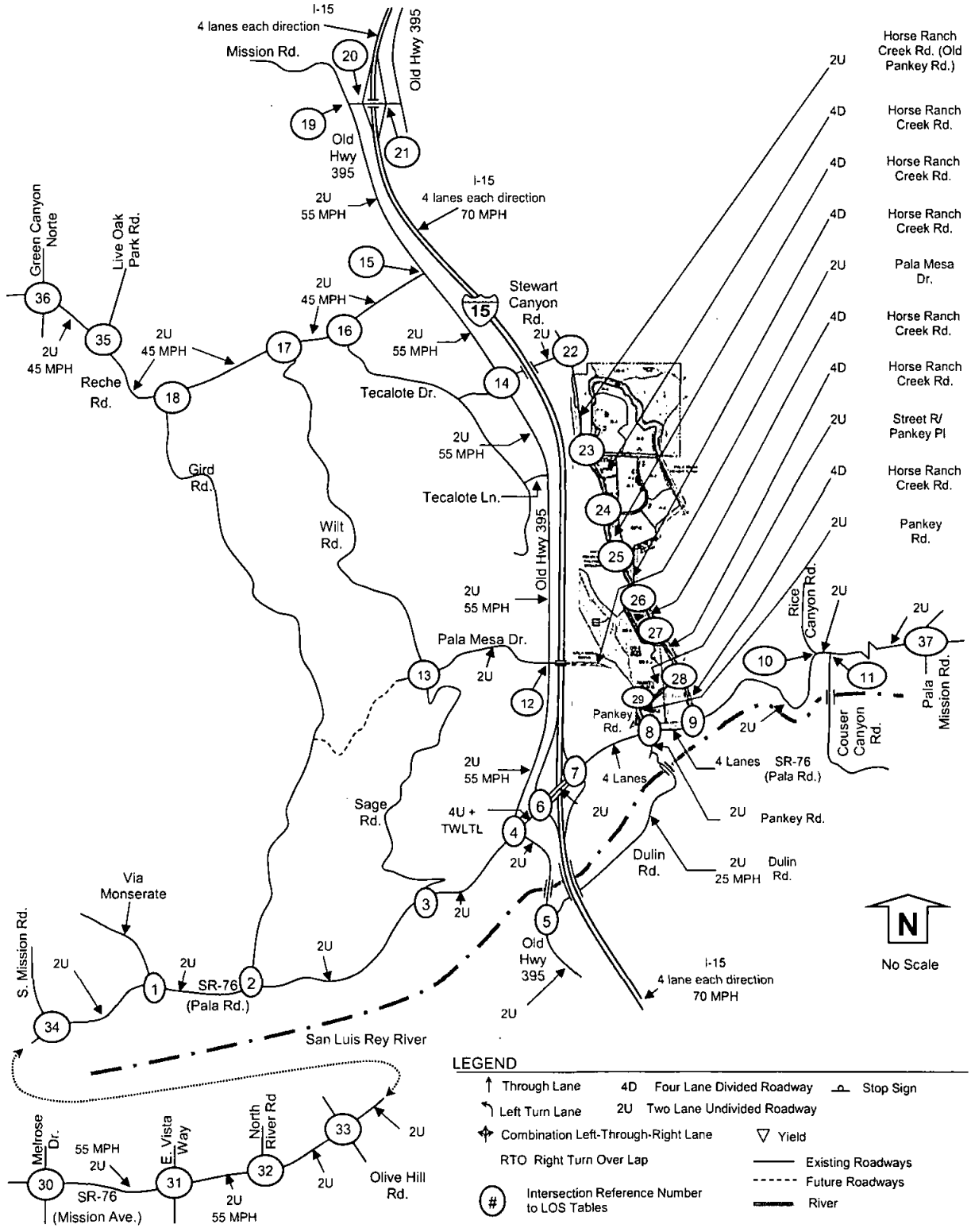


Figure 17b: Existing + Project Roadway Conditions

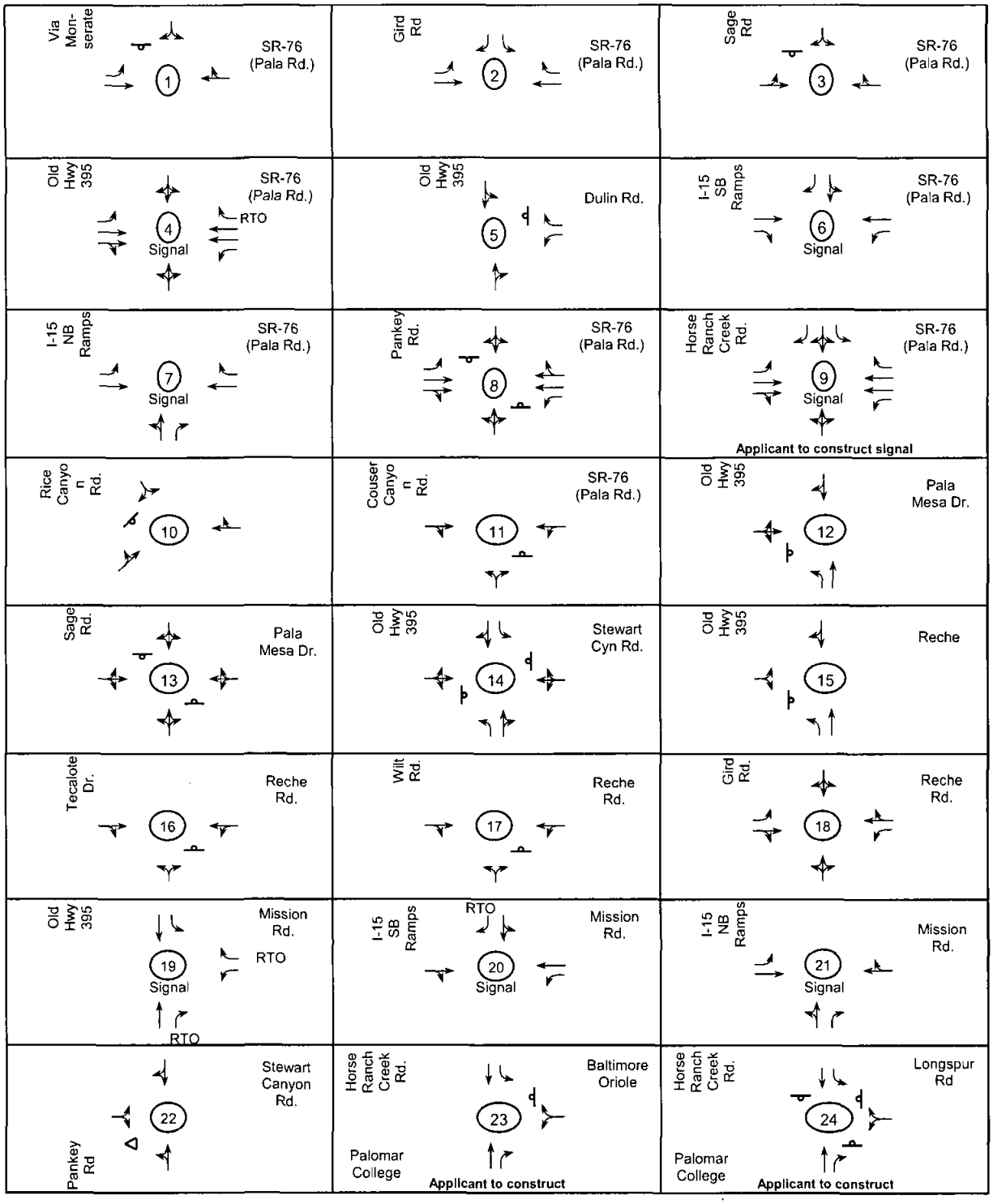


Figure 17c: Existing + Project Roadway Conditions

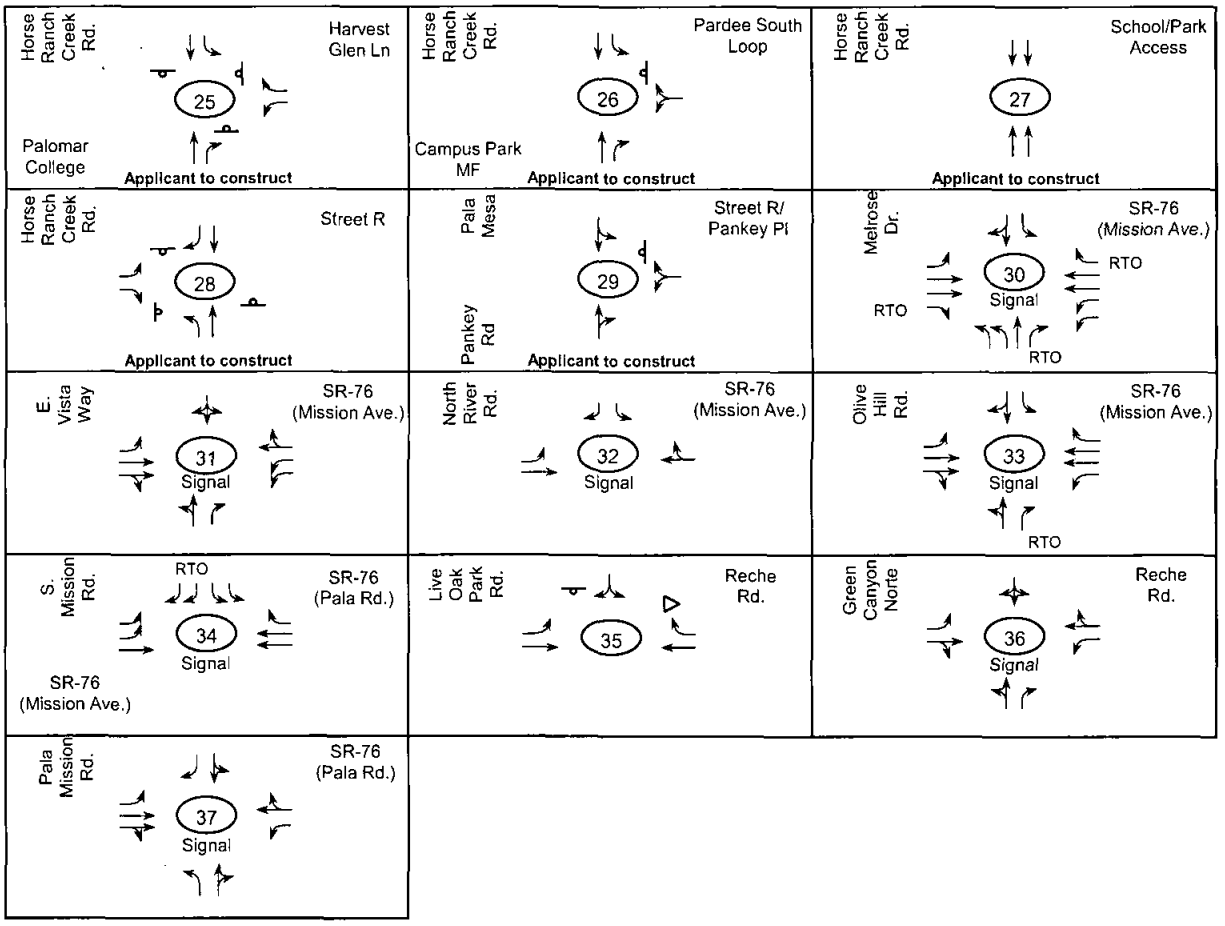


Figure 18a: Existing + Project Volumes (30% internal capture rate)

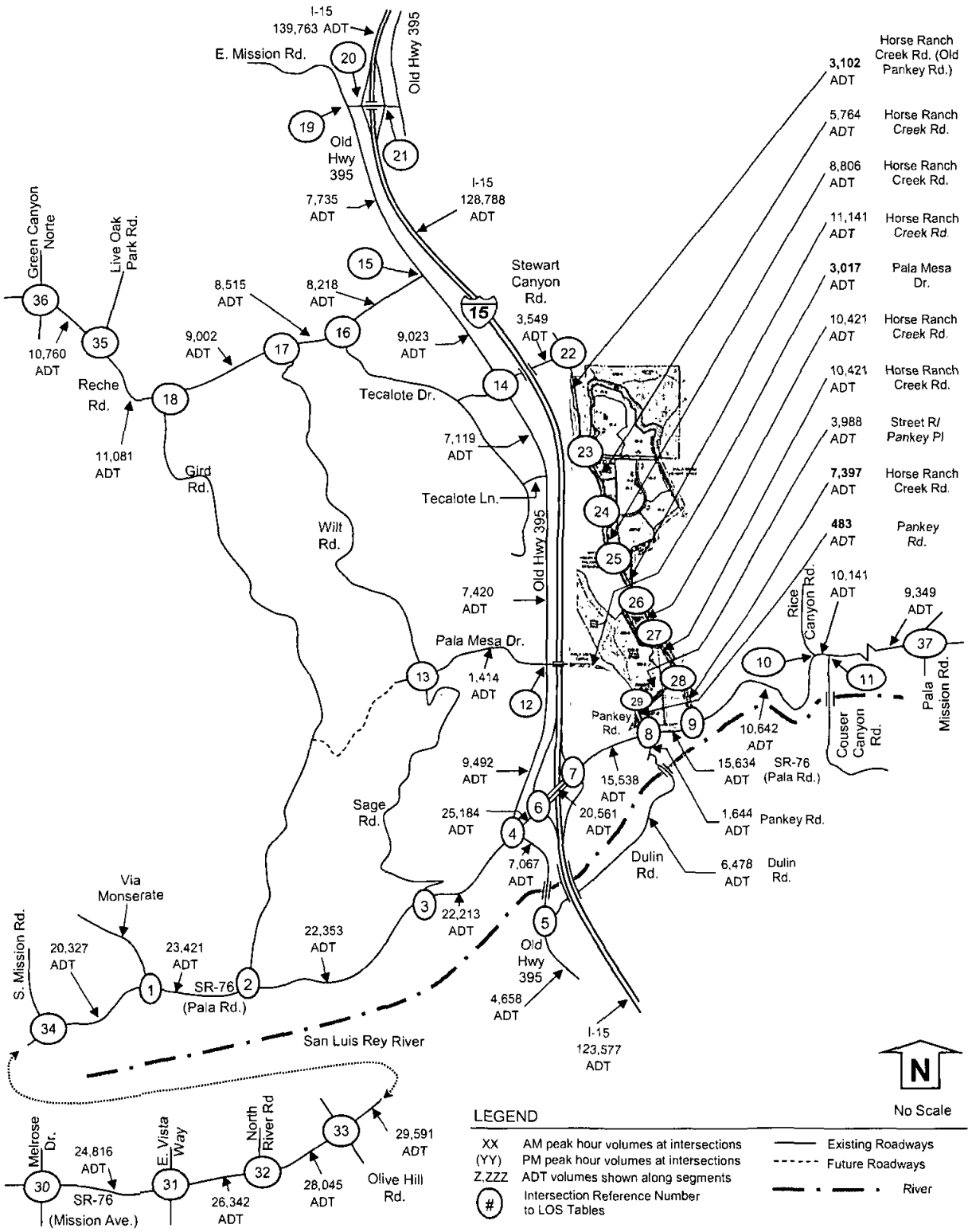


Figure 18b: Existing + Project Volumes (30% internal capture rate)

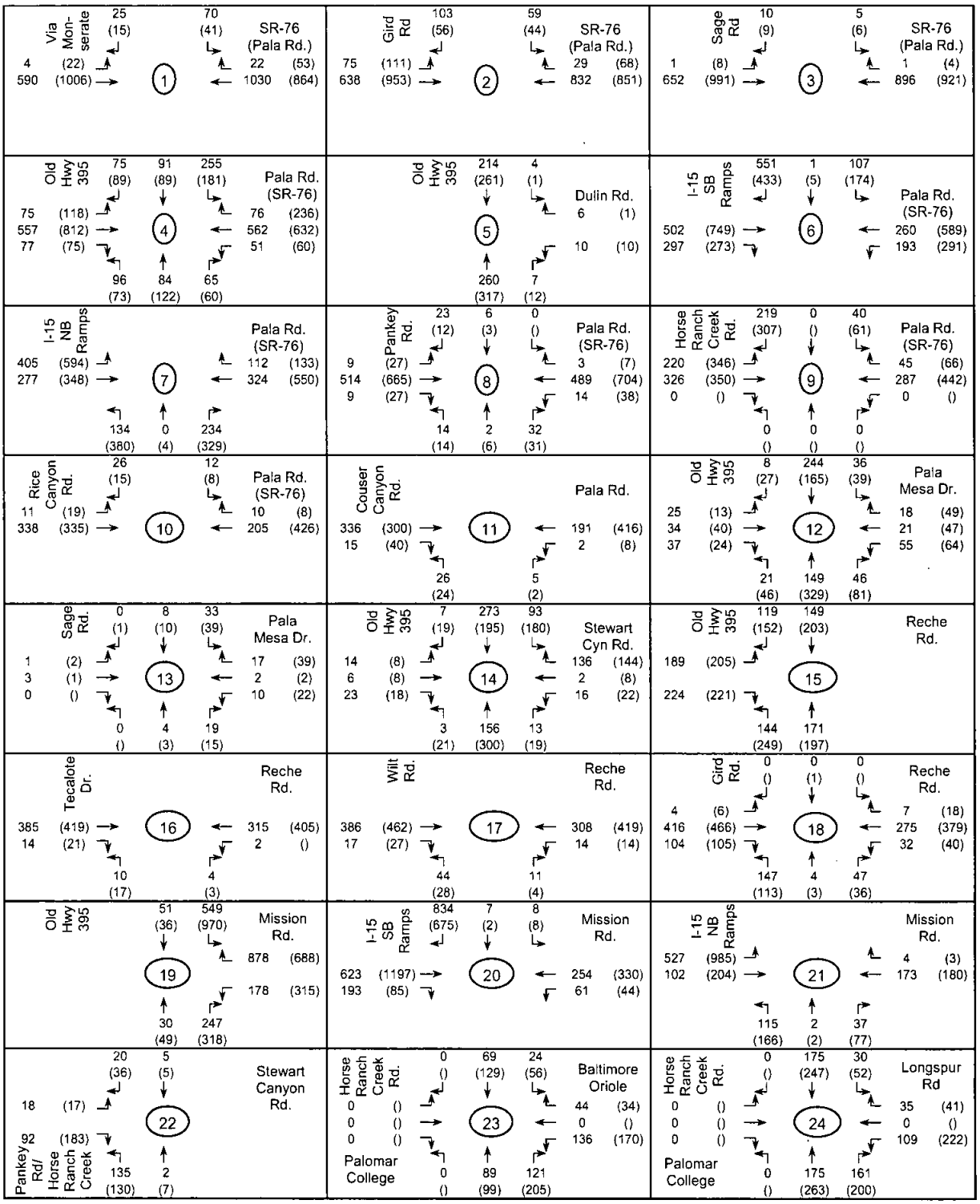


Figure 18c: Existing + Project Volumes (30% internal capture rate)

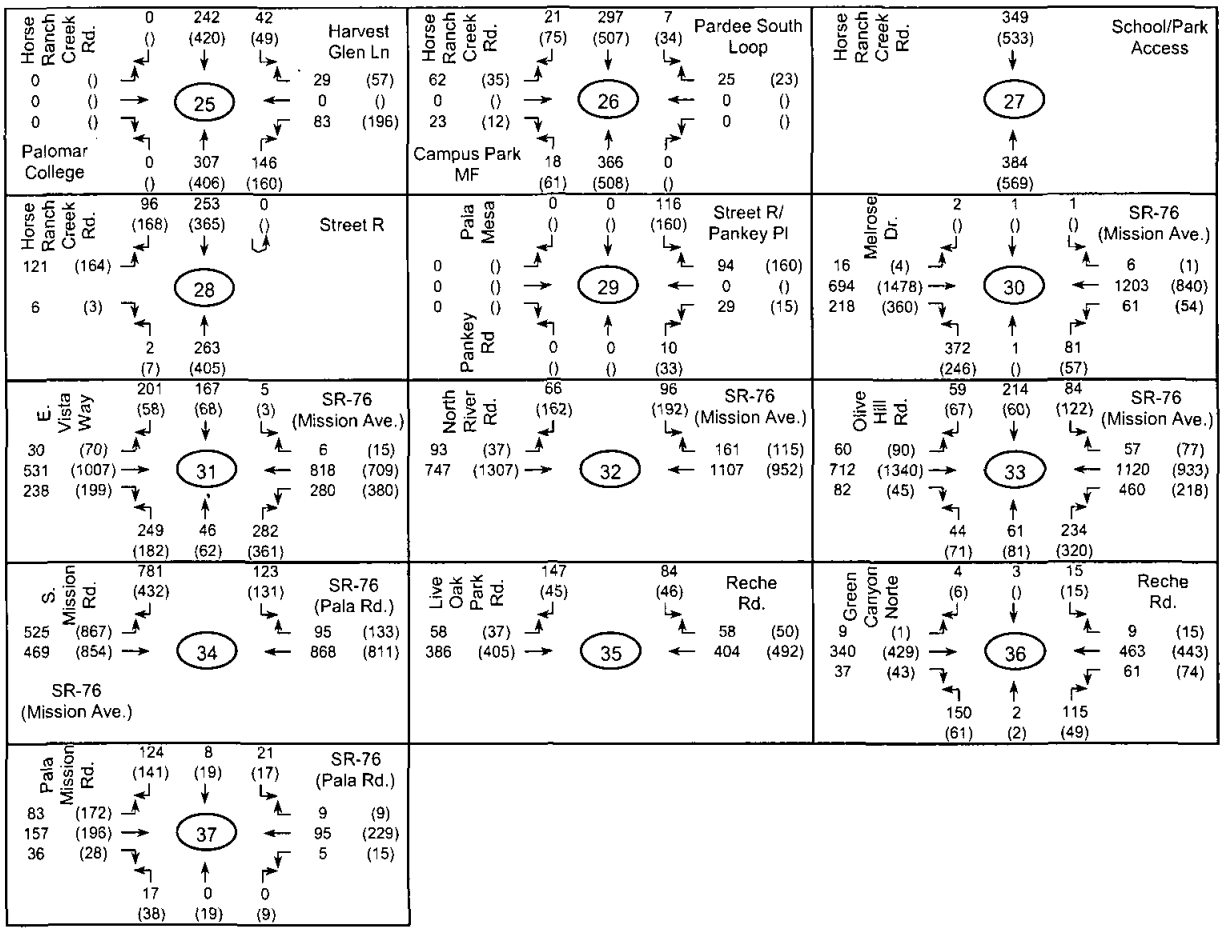


TABLE 14: EXISTING + PROJECT INTERSECTION LEVEL OF SERVICE (PRIOR TO MITIGATION)

Intersection & (Analysis)[1]	Move-ment	Peak Hour	Existing		Existing + Project				County	CMP
			Delay[2]	LOS[3]	Delay[2]	LOS[3]	Delta[4]	CM Vol[5]	Sig[6]	Sig[7]
1) SR-76 (Pala Rd) at	SB LR	AM	86.1	F	118.7	F	NA	0	No	NA
Via Monserate (U)	SB LR	PM	91.4	F	138.0	F	NA	0	No	NA
	All	AM	5.0	A	6.5	A	1.5	NA	NA	No
	All	PM	2.9	A	4.0	A	1.1	NA	NA	No
2) SR-76 (Pala Rd) at	All	AM	12.9	B	13.6	B	0.7	NA	No	No
Gird Rd (S)	All	PM	12.6	B	13.6	B	1.0	NA	No	No
3) SR-76 (Pala Rd) at	SB LR	AM	22.6	C	24.9	C	NA	0	No	NA
Sage Rd (U)	SB LR	PM	33.0	D	39.8	E	NA	0	No	NA
	All	AM	0.2	A	0.3	A	0.1	NA	NA	No
	All	PM	0.4	A	0.5	A	0.1	NA	NA	No
4) SR-76 (Pala Rd) at	All	AM	29.7	C	33.9	C	4.2	NA	No	No
Old Hwy 395 (S)	All	PM	30.2	C	36.3	C	6.1	NA	No	No
6) SR-76 (Pala Rd) at	All	AM	27.5	C	29.1	C	1.6	NA	No	No
I-15 SB Ramps (S)	All	PM	28.4	C	28.9	C	0.5	NA	No	No
7) SR-76 (Pala Rd) at	All	AM	22.4	C	28.6	C	6.2	NA	No	No
I-15 NB Ramps (S)	All	PM	46.7	D	63.7	E	17.0	NA	Yes	Yes
8) SR-76 (Pala Rd) at	NB LTR	AM	12.2	B	15.0	B	NA	29	No	No
Pankey Road (U)	NB LTR	PM	14.6	B	26.2	D	NA	36	No	No
	SB LTR	AM	0.0	A	13.1	B	NA	29	No	No
	SB LTR	PM	0.0	A	17.8	C	NA	15	No	No
9) SR-76 (Pala Rd) at	All	AM	DNE	NA	16.1	B	NA	NA	No	No
Horse Ranch Creek Rd (S)	All	PM	DNE	NA	20.3	C	NA	NA	No	No
10) SR-76 (Pala Rd) at	SB LR	AM	10.5	B	10.8	B	0.3	5	No	No
Rice Canyon Road (U)	SB LR	PM	12.4	B	13.1	B	0.7	5	No	No
11) SR-76 (Pala Rd) at	NB LR	AM	11.4	B	12.6	B	1.2	15	No	No
Couser Canyon Road (U)	NB LR	PM	13.5	B	15.5	C	2.0	13	No	No
12) Old Highway 395 at	EB LTR	AM	11.0	B	14.2	B	NA	34	No	No
Pala Mesa Dr (U)	EB LTR	PM	11.1	B	18.2	C	NA	40	No	No
East leg completed	WB LTR	AM	DNE	NA	17.5	C	NA	94	No	No
with project	WB LTR	PM	DNE	NA	24.3	C	NA	160	No	No
14) Old Highway 395 at	WB LTR	AM	10.8	B	11.3	B	NA	131	No	No
Stewart Canyon Road (U)	WB LTR	PM	11.9	B	16.7	C	NA	126	No	No
15) Old Highway 395 at	EB LR	AM	18.4	C	39.5	E	NA	20	Yes	NA
Reche Road (U)	EB LR	PM	35.9	E	219.2	F	NA	45	Yes	NA
	All	AM	10.6	B	17.6	B	7.0	NA	NA	No
	All	PM	17.6	B	77.9	F	60.3	NA	NA	Yes
19) Mission Road at	SB L	AM	12.2	B	12.8	B	0.6	NA	No	No
Old Highway 395 (S)	SB L	PM	27.3	C	40.7	D	13.4	NA	No	No
20) Mission Road at	SB LTR	AM	20.6	C	34.8	D	14.2	NA	No	No
I-15 SB Ramps (S)	SB LTR	PM	19.3	B	36.6	D	17.3	NA	No	No
21) Mission Road at	All	AM	17.2	B	19.0	B	1.8	NA	No	No
I-15 NB Ramps (S)	All	PM	37.5	D	49.1	D	11.6	NA	No	No
22) Stewart Canyon Rd at	EB LR	AM	8.7	A	9.3	A	NA	88	No	No
HRCR/Pankey Road (U)	EB LR	PM	8.7	A	9.6	A	NA	180	No	No
23) Horse Ranch Crk Rd at	WB LR	AM	DNE	NA	10.9	B	NA	No	No	No
Baltimore Oriole (U)	WB LR	PM	DNE	NA	13.3	B	NA	No	No	No
24) Horse Ranch Crk Rd at	All-Way	AM	DNE	NA	8.7	A	NA	No	No	No
Longspur Rd (U)	All-Way	PM	DNE	NA	11.9	B	NA	No	No	No
25) Horse Ranch Crk Rd at	All-Way	AM	DNE	NA	10.1	B	NA	No	No	No
Harvest Glen Ln (U)	All-Way	PM	DNE	NA	20.8	C	NA	No	No	No
26) Horse Ranch Crk Rd at	WB LR	AM	DNE	NA	10.7	B	NA	No	No	No
Pardee South Loop (U)	WB LR	PM	DNE	NA	11.9	B	NA	No	No	No
27) Horse Ranch Crk Rd at	WB LR	AM	DNE	NA	0.0	A	NA	No	No	No
School/Park Access (U)	WB LR	PM	DNE	NA	0.0	A	NA	No	No	No
28) Horse Ranch Crk Rd	All-Way	AM	DNE	NA	10.1	B	NA	No	No	No
at Street R (U)	All-Way	PM	DNE	NA	16.1	C	NA	No	No	No
29) Pankey/Pala Mesa Dr	WB LR	AM	DNE	NA	9.4	A	NA	No	No	No
at Street R (U)	WB LR	PM	DNE	NA	9.5	A	NA	No	No	No
34) SR-76 (Mission Ave) at	All	AM	18.9	B	19.4	B	0.5	NA	No	No
S. Mission Rd (S)	All	PM	21.5	C	22.1	C	0.6	NA	No	No

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized 2) Delay - HCM Control Delay in seconds. 3) LOS: Level of Service. 4) Delta is the increase in delay from project. 5) CM Vol: Critical Movement Volume used to show project volumes on the critical movement. 6) County Sig: is the project have a calculated impact based on the critical volume (Yes or No). 7) CMP Sig: Congention Mangement Program significant impact based on CMP criteria (Yes or No). DNE: Does Not Exist. NA: Not Applicable

TABLE 15: EXISTING + PROJECT SEGMENT ADT VOLUMES AND LEVEL OF SERVICE (PRIOR TO MITIGATION)

Segment	Sept 2005 Circulation Element Class.	Existing					Project	Existing + Project					County Sig Impact?	CMP Sig Impact?
		Daily Volume	# of Lanes	LOS E Capacity	V/C	LOS	Daily Volume	Daily Volume	LOS E Capacity	V/C	LOS	Change in V/C		
Old Highway 395														
East Mission Road to Reche Road	Collector	5,155	2	16,200	0.318	C	2,580	7,735	16,200	0.477	D	0.159	No	No
Reche Road to Stewart Canyon Road	Collector	5,646	2	16,200	0.349	C	3,377	9,023	16,200	0.557	D	0.208	No	No
Pala Mesa Drive to SR-76 (Pala Road)	Collector	8,302	2	16,200	0.512	D	1,190	9,492	16,200	0.586	D	0.073	No	No
Stewart Canyon Road														
Old Hwy 395 to Horse Ranch Creek Rd	Light Collector	590	2	16,200	0.036	A	2,959	3,549	16,200	0.219	B	0.183	No	No
Pankey Road														
Street R/Pankey Place to SR-76 (Pala Rd)	Collector	NA	(2)	0	NA	NA	483	483	16,200	0.03	A	NA	No	No
Horse Ranch Creek Road														
Stewart Canyon Rd to Baltimore Oriole (#23)	Light Collector	40	(2)	16,200	0.002	A	3,062	3,102	16,200	0.19	B	0.154	No	No
Baltimore Oriole (#23) to Longspur Rd (#24)	(Boulevard 4.2A)	NA	(4)	NA	NA	NA	5,764	5,764	27,000	0.21	Un	0.213	No	No
Longspur Rd (#24) to Harvest Glen Ln (#25)	(Boulevard 4.2A)	NA	(4)	NA	NA	NA	8,806	8,806	27,000	0.33	Un	0.326	No	No
Harvest Glen Ln (#25) to Intersection (#26)	(Boulevard 4.2A)	NA	(4)	NA	NA	NA	11,141	11,141	27,000	0.41	Un	0.413	No	No
Intersection (#26) to Park/School (#27)	(Boulevard 4.2A)	NA	(4)	NA	NA	NA	10,421	10,421	27,000	0.39	Un	0.386	No	No
Park/Sch (#27) to Street R/Pankey Pl (#28)	(Boulevard 4.2A)	NA	(4)	NA	NA	NA	10,421	10,421	27,000	0.39	Un	0.386	No	No
Street R/Pankey Pl (#28) to SR-76 (Pala Rd)	(Boulevard 4.2A)	NA	(4)	NA	NA	NA	7,397	7,397	27,000	0.27	Un	0.274	No	No
Pala Mesa Drive														
Old Highway 395 to Street R/Pankey Pl	(Light Collector)	0	(2)	16,200	0.000	A	3,017	3,017	16,200	0.19	B	0.186	No	No
Street R/Pankey Place														
Pala Mesa/Pankey to Horse Ranch Creek Rd	(Light Collector)	0	(2)	16,200	0.000	A	3,988	3,988	16,200	0.25	B	0.246	No	No

Notes: (proposed classification) or (proposed # of lanes). LOS: Level of Service. V/C: Volume to Capacity ratio. CMP: Congestion Managmement Program (SANDAG).
Daily volumes is a 24 hour volume. LOS for proposed classification is identified as "Un" as under capacity and "Ov" for over capacity. NA: Not Applicable.

TABLE 16A: EXISTING + PROJECT STATE ROUTE VOLUMES AND LEVEL OF SERVICE AM (PRIOR TO MITIGATION, BUT WITH GRANITE IMPROVEMENT)

State Route 76	Lanes in	AM (Eastbound)					Project				Change In		AM (Westbound)					Project				Change In	
Study Limits	each dir	Vol	Dir	Cap	v/c	LOS	Vol	E+P	v/c	LOS	v/c	Sig	Vol	Dir	Cap	v/c	LOS	Vol	E+P	v/c	LOS	v/c	Sig
Mission Rd to Via Monserate	1	745	EB	950	0.78	D	47	792	0.83	D	0.05	No	901	WB	950	0.95	E	46	947	1.00	E	0.05	Yes
Via Monserate to Gird Rd	1	808	EB	950	0.85	D	49	857	0.90	E	0.05	Yes	895	WB	950	0.94	E	51	946	1.00	E	0.05	Yes
Gird Rd to Sage Rd	1	740	EB	950	0.78	D	49	789	0.83	D	0.05	No	542	WB	950	0.57	C	51	593	0.62	C	0.05	No
Sage Rd to Old Hwy 395	1	760	EB	950	0.80	D	49	809	0.85	D	0.05	No	534	WB	950	0.56	C	51	585	0.62	C	0.05	No
Old Hwy 395 to I-15 SB Ramps	2	1507	EB	2050	0.74	D	24	1531	0.75	D	0.01	No	665	WB	2028	0.33	B	18	683	0.34	B	0.01	No
I-15 SB Ramps to I-15 NB Ramps	1	844	EB	950	0.89	E	83	927	0.98	E	0.09	Yes	539	WB	950	0.57	C	157	696	0.73	D	0.17	No
I-15 NB Ramps to Pankey Rd	2	559	EB	3100	0.18	A	201	760	0.25	A	0.06	No	606	WB	3030	0.20	A	228	834	0.28	A	0.08	No
Pankey Rd to Horse Ranch Creek Rd	2	589	EB	1806	0.33	B	220	809	0.45	B	0.12	No	540	WB	2028	0.27	A	219	759	0.37	B	0.11	No
Horse Ranch Creek Rd to Rice Cyn	1	588	EB	950	0.62	C	40	628	0.66	C	0.04	No	539	WB	950	0.57	C	45	584	0.61	C	0.05	No
Rice Cyn to Couser Cyn	1	589	EB	950	0.62	C	38	627	0.66	C	0.04	No	540	WB	950	0.57	C	40	580	0.61	C	0.04	No

Source: SANDAG Hwycov 2007. Notes: Dir = Direction. Vol = Volume. Cap = Capacity. v/c = volume to capacity ratio. LOS = Level of Service.

TABLE 16B: EXISTING + PROJECT STATE ROUTE VOLUMES AND LEVEL OF SERVICE PM (PRIOR TO MITIGATION, BUT WITH GRANITE IMPROVEMENT)

State Route 76	Lanes in	PM (Eastbound)					Project				Change In		PM (Westbound)					Project				Change In	
Study Limits	each dir	Vol	Dir	Cap	v/c	LOS	Vol	E+P	v/c	LOS	v/c	Sig	Vol	Dir	Cap	v/c	LOS	Vol	E+P	v/c	LOS	v/c	Sig
Mission Rd to Via Monserate	1	1064	EB	950	1.12	F	73	1137	1.20	F	0.08	Yes	618	WB	950	0.65	C	64	682	0.72	D	0.07	No
Via Monserate to Gird Rd	1	1077	EB	950	1.13	F	79	1156	1.22	F	0.08	Yes	786	WB	950	0.83	D	67	853	0.90	E	0.07	Yes
Gird Rd to Sage Rd	1	645	EB	950	0.68	C	79	724	0.76	D	0.08	No	742	WB	950	0.78	D	67	809	0.85	D	0.07	No
Sage Rd to Old Hwy 395	1	638	EB	950	0.67	C	79	717	0.75	D	0.08	No	768	WB	950	0.81	D	67	835	0.88	E	0.07	Yes
Old Hwy 395 to I-15 SB Ramps	2	816	EB	2050	0.40	B	32	848	0.41	B	0.02	No	1258	WB	2028	0.62	C	33	1291	0.64	C	0.02	No
I-15 SB Ramps to I-15 NB Ramps	1	718	EB	950	0.76	D	135	853	0.90	E	0.14	Yes	1153	WB	950	1.21	F	199	1352	1.42	F	0.21	Yes
I-15 NB Ramps to Pankey Rd	2	696	EB	3100	0.22	A	343	1039	0.34	B	0.11	No	820	WB	3030	0.27	A	282	1102	0.36	B	0.09	No
Pankey Rd to Horse Ranch Creek Rd	2	631	EB	1806	0.35	B	346	977	0.54	C	0.19	No	897	WB	2028	0.44	B	307	1204	0.59	C	0.15	No
Horse Ranch Creek Rd to Rice Cyn	1	631	EB	950	0.66	C	61	692	0.73	D	0.06	No	897	WB	950	0.94	E	66	963	1.01	F	0.07	Yes
Rice Cyn to Couser Cyn	1	526	EB	950	0.55	C	55	581	0.61	C	0.06	No	930	WB	950	0.98	E	61	991	1.04	F	0.06	Yes

Source: SANDAG Hwycov 2007. Notes: Dir = Direction. Vol = Volume. Cap = Capacity. v/c = volume to capacity ratio. LOS = Level of Service.

TABLE 17: EXISTING + PROJECT FREEWAY VOLUMES AND LEVEL OF SERVICE (PRIOR TO MITIGATION)

Freeway	I-15				I-15				I-15			
Segment	Rainbow Valley Blvd to Mission Rd				Mission Rd to SR-76 (Pala Rd)				SR-76 to Escondido Hwy (Old 395)			
Existing (Year 2006)												
ADT	136,000				127,000				120,000			
Peak Hour	A M		P M		A M		P M		A M		P M	
Direction	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
Number of Lanes	4	4	4	4	4	4	4	4	4	4	4	4
Capacity (1)	9,400	9,400	9,400	9,400	9,400	9,400	9,400	9,400	9,400	9,400	9,400	9,400
K Factor (2)	0.0619	0.0619	0.0738	0.0738	0.0619	0.0619	0.0738	0.0738	0.059	0.059	0.0723	0.0723
D Factor (3)	0.1653	0.8347	0.6398	0.3602	0.1653	0.8347	0.6398	0.3602	0.1989	0.8011	0.6955	0.3045
Truck Factor (4)	0.9186	0.9186	0.9186	0.9186	0.9186	0.9186	0.9186	0.9186	0.8977	0.8977	0.8977	0.8977
Peak Hour Volume	1,515	7,650	6,991	3,936	1,415	7,143	6,528	3,675	1,569	6,318	6,722	2,943
Volume to Capacity	0.161	0.814	0.744	0.419	0.150	0.760	0.694	0.391	0.167	0.672	0.715	0.313
LOS	A	D	C	A	A	C	C	A	A	C	C	A
Project Pk Hr Vol	156	118	167	221	71	59	83	103	118	139	208	166
Existing + Project												
Peak Hour Volume	1,671	7,768	7,158	4,157	1,486	7,202	6,611	3,778	1,687	6,457	6,930	3,109
Volume to Capacity	0.178	0.826	0.761	0.442	0.158	0.766	0.703	0.402	0.179	0.687	0.737	0.331
LOS	A	D	C	B	A	C	C	A	A	C	C	A
Increase in V/C	0.017	0.013	0.018	0.024	0.008	0.006	0.009	0.011	0.013	0.015	0.022	0.018
Direct Impact?	No	No	No	No	No	No	No	No	No	No	No	No
CMP Impact?	No	No	No	No	No	No	No	No	No	No	No	No

Notes: (1) Capacity of 2,350 passenger cars per hour per lane (pcphpl) from Caltrans' Guide for the Preparation of Traffic Impact Studies, Dec 2002. (2) Latest K factor from Caltrans (based on 2005 data), which is the percentage of Annual Average Daily Traffic (AADT) in both directions. (3) Latest D factor from Caltrans (based on 2005 data), which when multiplied by K and ADT will provide peak hour volume. (4) Latest truck factor from Caltrans (based on 2000 data). CMP: Congestion Management Program impact.

Under existing + project conditions, direct impacts are calculated based on the County of San Diego significance criteria where the project will add 50 or more directional peak hour trips at the following eight locations (two intersections and six state routes):

Intersections

1) Intersection of SR-76 (Pala Rd) / I-15 NB Ramp (LOS E PM)
2) Intersection of Old Highway 395 / Reche Road (LOS E AM & LOS F PM)

1) State Routes State Route 76 (Pala Rd) from S. Mission Road to Via Monserate (LOS E AM & LOS F PM)
2) State Route 76 from Via Monserate to Gird Rd (LOS E AM & LOS F PM)
3) State Route 76 from Sage Rd to Old Hwy 395 (LOS E PM)
4) State Route 76 from I-15 SB Ramp to I-15 NB Ramp (LOS E AM & LOS F PM)
5) State Route 76 from Horse Ranch Creek Rd to Rice Canyon Rd (LOS F PM)
6) State Route 76 from Rice Canyon Rd to Couser Canyon Rd (LOS F PM)

Existing + project LOS calculations are included in **Appendix K.**

3.5 Cumulative Conditions

This section will document the cumulative conditions.

3.5.1 Cumulative Projects

Cumulative projects were accounted for through a general plan summary approach where SANDAG provided a Series 10 Year 2030 model that included all cumulative projects that are consistent with the current land use plan, all non-consistent cumulative projects that will require a variance such as a General Plan Amendment, and all Casino projects that have been submitted to the County. This cumulative traffic model approach is currently being utilized by the County for the General Plan Update.

In addition to the aforementioned approach, a review of San Diego County records, ninety five (95) nearby cumulative projects were identified, which are anticipated to generate traffic and use identical roadways as the project. The criteria for identifying the cumulative projects are included below with a list of the cumulative projects included in **Table 18.**

1) Geographic boundary based on proximity to study roadways and to roadways that will feed toward or away from our project location (i.e. radius around project site and buffer around adjacent transportation corridors). The buffer was applied to SR-76 from Olive Hill Road to just past Cole Grade Road and to Old Highway 395 from approximately the Rainbow area down to the Bonsall area.
2) Reviewed available cumulative projects within this study area. Withdrawn or denied cumulative projects were removed.
3) These cumulative projects are considered to be cumulatively considerable from a CEQA stand point as they represent major projects contributing to the traffic study boundary. This includes TPMs within the study boundary to provide a comprehensive approach.
4) Casino projects that are not listed in the DPLU/DPW cumulative traffic binders were researched and included.
5) Non daily traffic generators were excluded (i.e. cell sites).

TABLE 18: CUMULATIVE PROJECTS

#	Project Reference	Project Name	Location	Area (acres)	Proposed Improvements
1	TM 5354 GPA 04-02	Meadowood	Just north of SR 76, 0.25 mile east of I-15	389.8	Mixed-use development, including: 355 single family dwelling units, 503 multi-family dwelling units, an Elementary School and a small neighborhood park.

#	Project Reference	Project Name	Location	Area (acres)	Proposed Improvements
2	TM 5424, S 05-014, SPA 05-001 GPA 05-003 REZ 05-005	Campus Park West	Northeast quadrant of I-15 and SR 76	118.5	Mixed-use development including approximately 395 MFR units, 110,000 s.f. General Commercial, 10 acres Highway Commercial and 300,000 s.f. Office Professional. Located mostly north of SR-76 with a portion south of SR-76.
3	TM 5187 RPL[11] SPA 99-005 MUP 99-020 REZ 99-020 MUP/REZ 04-024	Pala Mesa Highlands	West of Old Highway 395 between Pala Mesa Drive and Via Belamonte	84.6	Maximum of 130 SFR. Density 1.6 DU/acre. Lot sizes vary from 5,500 s.f. to 23,500 s.f., two parks totaling 4.3 acres, trails, 36.5 acres of open space. SPA to allow clustering.
4	TM 4729 RPL[3] TE	Tedder TM	South side of Pala Mesa Drive, west of I-15 and east of Daisy Lane	29.5	Split lot into 13 SFR lots, ranging in size from 1.0 to 6.43 acres net.
5	TPM 20830	Hukari subdivision	Northern terminus of Mountain View Road and West Lilac Road on west side of Bonsall	30	Minor residential subdivision with road improvements. 4 SFR lots plus one remainder lot (3.4 to 7.7 net acres each).
6	TM 5532 S 07-012	Fallbrook Ranch	East of Old Highway 395 and Sterling View Drive (at Mission Road), Fallbrook		11 SFR lots
7	MUP 03-127	Los Willows Inn and Spa	532 Stewart Canyon Road		Add additional units to a Bed and Breakfast
8	TPM 20411	Reeve TPM	2987 Sumac Road, Fallbrook	8.8	Minor residential subdivision. 3 SFR lots (2-acres minimum).
9	TPM 20491	Evans TPM	West side of Sage Road between Sumac Road and Pala Road, Fallbrook	4.10	Minor subdivision into 2 residential/ agricultural parcels (2.00 and 2.10 acres). Private septic system.
10	TPM 20841	Bridge Pac West I TPM	3321 Sage Road, Fallbrook	15.90	Minor residential subdivision. 4 SFR lots plus one remainder lot (2.04, 2.08, 2.12, 2.14 and remainder 7.08 net acres each).

#	Project Reference	Project Name	Location	Area (acres)	Proposed Improvements
11	SPA 03-005 R 00-000 MUP 00-000 P 74-120W[1] P 74-121M[10]; MUP 03-006; MUP 04-005	Pala Mesa Resort	2001 Old Highway 395 at Tecalote Lane, north of SR 76 and immediately west of I-15, Fallbrook	181.2	Specific Plan Amendment for modification and construction of new recreation and resort-related facilities. Addition of 186 resort rooms and wedding facility. Expansion of resort by 6 acres.
12	TPM 20431 S 98-006	Lung TPM	Citrus Drive and Calle Canonero, Fallbrook	10.7	Minor residential subdivision. 2 SFR lots (6.7 and 4.0 acres)
13	TPM 20440	Chipman TPM	East side of Citrus Lane between Peony Drive and Dos Ninos, Fallbrook	13.54	Minor residential subdivision. 4 SFR lots plus one remainder lot, ranging from 2.13 to 2.85 net acres each and remainder 4.00 net acres. Septic system.
14	TPM 20484	Bierman TPM	4065 Calle Canonero, Fallbrook, south of Vern Drive and west of Lorita Lane	9.91	Minor residential subdivision. 4 SFR lots, ranging from 2.01 to 2.19 net acres each. Septic system.
15	S 04-026	Cooke Residence	3974 Citrus Drive between Wilt Road and Vern Drive	N/A	4,723 s.f. SFR
16	TPM 20581	Treister TPM	Donut-shaped parcel surrounding 401 Ranger Road, Fallbrook	21.81	Minor residential subdivision. 4 SFR lots plus one remainder lot.
17	TPM 20793 03-02-068	Mission Ridge Road TPM	235 Mission Ridge Road east of I-15 off Mission Road, Fallbrook	19.55	Minor residential subdivision. 4 SFR lots.
18	TM 5413	Rancho Alegre TPM	West side of Ranger Road approx. 0.4 mile north of Reche Road	70	Part of 116-acre subdivision (33 lots). This project consists of 20 lots in the eastern portion of property and proposes a different street alignment, grading, and lot arrangement.
19	TPM 20853	Rarick TPM	3261 Reche Road, Fallbrook	8.77	Minor residential subdivision. 4 SFR lots (ranging from 2.02 to 2.25 acres each). Septic system.
20	TPM 20936	Fernandez TPM	3838 Foxglove Lane, Fallbrook	10.4	Minor residential subdivision. 4 SFR lots. Minimum lot size 2 acres. 2 existing SFR on site.

#	Project Reference	Project Name	Location	Area (acres)	Proposed Improvements
21	TPM 20944	Rabuchin TPM	4065 Calle Canoncro, Fallbrook	9.91	Subdivision of 2 lots into 4 SFR lots. Existing SFR on site
22	NA	Pala Casino	Pala Road and Pala Mission Road	TBD	187,300 s.f. casino, hotel, theater.
23	MUP 87-021 RPL[2] REZ P87-001 RPL[2]	Rosemary's Mountain/ Palomar Aggregates Quarry	North side of SR 76, 1.25 miles east of I-15	96.4	Aggregate rock quarry and processing plants for concrete and asphalt. Approximately 22 million tons of rock would be mined over 20 years. Realignment of SR 76 from Project site west to I-15. Reclamation Plan to designate lower portion of site as water storage reservoir after completion of mining activities.
24	TPM 20542	Patapoff Minor Residential Subdivision	Southern end of Rainbow Hills Road	59.1	Subdivide property into four parcels of 4.3 acres, 4.2 acres, 9.6 acres, 8 acres, and a 33-acre parcel
25	TM 5321	Prominence at Pala	Pala Del Norte Road. 1/3 mile north of SR-76 and approximately two miles west of the Pala Indian Reservation	346.6	Subdivide the property into 30 SFR and two open space lots ranging in size from 4 to 96 acres
26	NA	Palomar College North Education Center District Master Plan	East side of I-15 between Pankey Road and Pala Mesa Heights Drive	85	New Community College campus to serve approximately 12,000 students, to include classroom and administration buildings, parking, open space, athletic fields, and off-site road, water and sewer improvements.
27	NA	Caltrans Realign-ment of SR 76	From I-15 to west of Rice Canyon Road	NA	Realignment and widening of roadway, improvements to northbound I-15 on- and off-ramp.

#	Project Reference	Project Name	Location	Area (acres)	Proposed Improvements
28	NA	San Luis Rey Municipal Water District (SL RMWD) Water, Wastewater and Recycled Water Master Plan	SLRMWD service area and vicinity, north and south of SR-76 between I-15 and Pala Temecula Road	Over 3,000	Exploration of pipeline and water storage options.
29	TM 5231		Canonita Drive and Old Hwy 395, Fallbrook	30.48	39 condo units
30	TM 5276		Aqueduct Road and Via Urner, Bonsall	12.8	8 SFR lots
31	TM 5346		Old Hwy 395 and Via Urner, Bonsall	38.4	9 SFR lots
32	TM 5410	Marquart Ranch	West Lilac Road and Mesa Lilac Road, Bonsall	44.2	9 SFR lots. Includes improvements to West Lilac Road and Mesa Lilac Road, and drainage improvements.
33	TM 5449	Fallbrook Oaks	Reche Road and Ranger Road, Fallbrook	26	19 SFR lots
34	TM 5469	Ridge Creek Drive	Ridge Creek east of Live Oak Park Road and Ridge Drive, Fallbrook	30.4	14 SFR lots
35	TM 5499	Club Estates	SR 76 east of Cole Grade Road at Pauma Valley Drive	48.3	31 SFR lots
36	TM 5540; MUP 07-007	Oak Tree Ranch TM	15560 Spring Valley Road	9.95	24 SFR
37	TM 5545	Turnbull TM	32979 Temet Drive	22.9	17 lots
38	TPM 20913	Wexler TPM		2.54	4 lots
39	TM 5223 MUP 00-030	Shadow Run Ranch	Shadow Run Ranch, SR-76 and Adams Drive, Pala	263	54 SFR lots and 2 open space lots. MUP filed concurrently for Planned Residential Development that would cluster residential development on minimum 2-acre lots.
40	TPM 20896	Diana Acres	Adams Drive off SR-76, Pauma Valley		3 lots

#	Project Reference	Project Name	Location	Area (acres)	Proposed Improvements
41	TPM 20804	Hunter Subdivsion	15550 Adams Drive	7.5	3 lots
42	TPM 20538	Burge TPM	34487 Citracado Drive, Pala	12.58	4 lots plus remainder
43	MUP 99-001	Pauma Valley Packing Company	34188 Hampton Road	4.14	Packing and processing
44	TM 5223; MUP 00-030	Shadow Run Ranch/ Schoepe-Pauma TM	15040 Adams Drive	263.17	13 lots
45	TM 5508	Warner Ranch	Pala-Pauma	513	732 SFR lots, 168 condo units, community park, fire station lot
46	CASINO	Pauma Casino and Hotel	Approximately 11 miles east of I-15 along SR-76		400 room hotel and 171,000 s.f. casino
47	TPM 20451	De Jong/Pala Minor Subdivision	Canonita Drive between I-15 and Tecalote Drive	5.62	Minor residential subdivision. 3 SFR lots (1.03, 2.06 and 2.31 net acres each).
48	TPM 20800	Crossroads Investors Minor Subdivision	Ranger Road, Fallbrook	15.5	Minor residential subdivision. 4 SFR lots plus one remainder lot. Existing SFR and grove on site
49	TM 5217/5225/ 5227/5228 MUP 00-027	Chaffin/Red Mountain Ranch Sub-divisions	Rainbow Glen Road and Red Mountain Dam Road, Fallbrook	455.9	TM 5217: Residential development with 29 SFR lots (2.28 to 18.33 acres) and 2 biological open space zones. TM 5225: 55 acres divided into 6 SFR lots (8.1 to 13.9 acres). TM 5227: 44.5 acres divided into 4 SFR lots (8.08 to 13.71 acres each). TM 5228: 19.1 acres divided into 2 lots (8.4 and 10.7 acres).
50	TPM 20505	John Collins TPM	Margarita in Fallbrook	8.29	2 lots
51	TPM 21085	Brannon Trust TPM Remai	411 Yucca Road, Fallbrook		4+ lots
52	TPM 20976	Dien N Do TPM	405 Ranger Road		4+ lots
53	TPM 20373	Tim Rosa TPM	2973 Los Alisos Drive	13	4 lots plus remainder
54	TPM 20427	Leising TPM	1246 Via Vista	10.83	4 lots
55	TPM 20434	Atteberry TPM	1166 Sierra Bonita	9	3 lots

#	Project Reference	Project Name	Location	Area (acres)	Proposed Improvements
56	TPM 20980	Johnson TPM	3035 Trelawney Lane		2 lots
57	TPM 20381	Chipman TPM	Camino Zasa, Fallbrook	24.5	4 lots plus remainder
58	TPM 21047	American Lotus Bhuddist Association TPM	Reche Road at Rabbit Hill, Fallbrook		4 lots plus remainder lot
59	TM 5547	Reche Road TM	3129 Reche Road, Bonsall	33.5	12 SFR lots
60	TM 5158; RPL3	Palisades Estates	3880 Dos Niños Road/Elevado Road	408.4	51 lots
61	TPM 19742	Dion TPM and time extension	3562 Canonita Drive	7.5	2 lots
62	TPM 20476	Patricia Daniels TPM	3609 Canonita Road, Fallbrook	13.2	4 lots plus remainder
63	TPM 20443	Cameron Subdivision	2644 Vista de Palomar, Fallbrook. North side of Vista de Palomar between Post Hill and Via Rancheros	11.31	Minor residential subdivision. 3 SFR lots (2.22, 2.44 and 6.37 acres each). Septic system.
64	TPM 20473	Tesla Gray TPM	East end of Vista de Palomar, and north end of Old Post Road, Fallbrook	28.91	Minor residential subdivision. 4 SFR lots plus one remainder lot. Future development of 5 SFR
65	TPM 20592	Aspel TPM	3107 Old Post Road, Fallbrook	7.32	Minor residential subdivision. 2 SFR lots (2.09 and 5.20 acres each).
66	TPM 20317	James Patapoff TPM	2639 Via Alicia, Fallbrook	16.8	Subdivision of 16.8 acres into 4 lots plus a remainder lot
67	TPM 20503	Yew Tree Spring Water Corporation	3573 Diego Estates Drive, Fallbrook	7.48	3 residential lots
68	TPM 20610	Haugh, Granger TPM	Fallbrook	12.94	4 lots
69	TPM 20614; RPL1	Brown, Lee & Karen, TPM	3850 Gird Road	6.46	3 lots

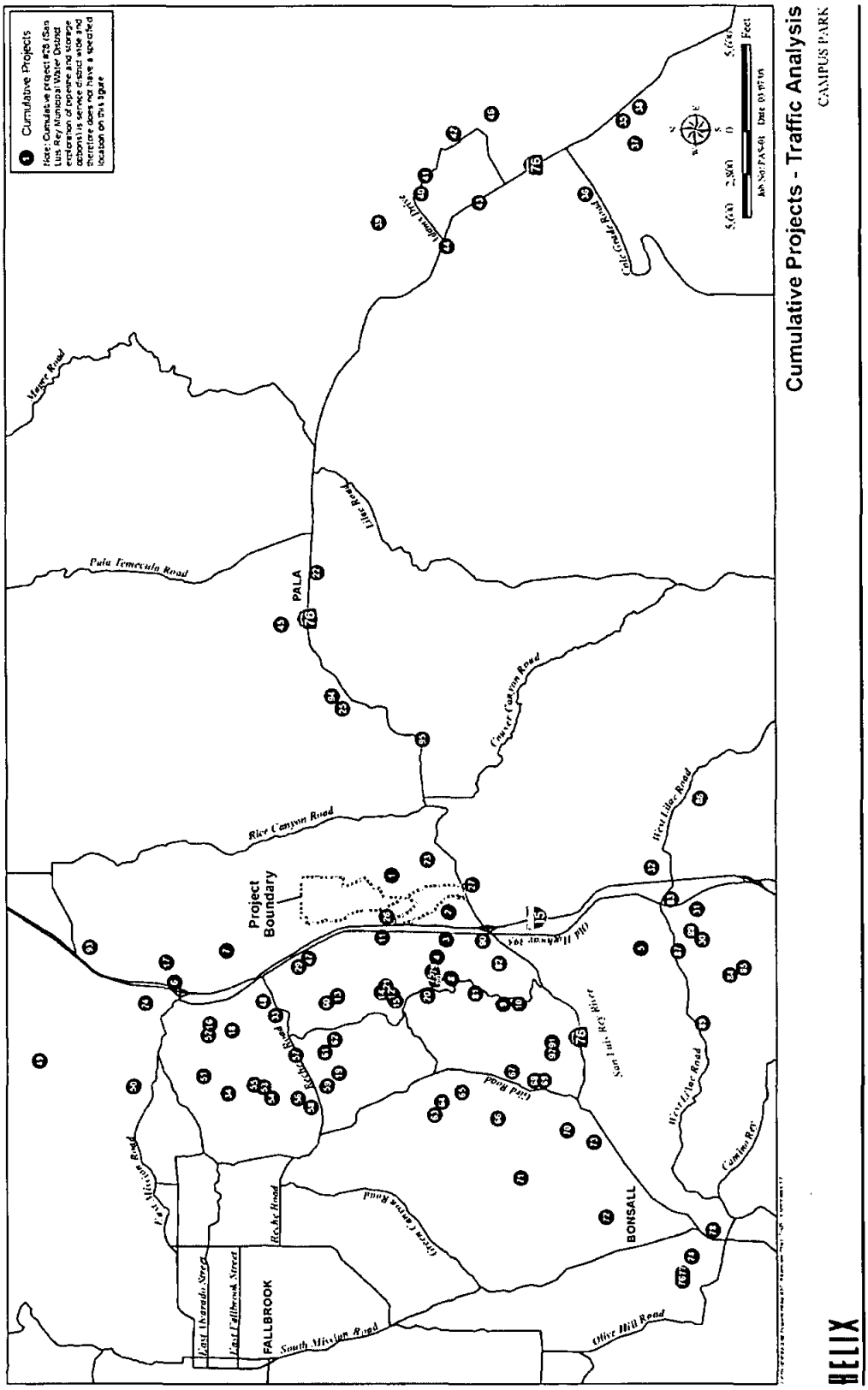
#	Project Reference	Project Name	Location	Area (acres)	Proposed Improvements
70	TPM 20648	Pepper Drive TPM	3926 Flowerwood Lane	1.39	4 residential lots
71	TM 4971	Surf Properties TM	3545 Vista Corona	46.89	15 lots
72	TM 4908	Brook Hills TM	4061 La Cañada Road, Fallbrook	96.71	35 lots
73	MUP 02-011	Latter-Day Saints/Via Monserate	Fallbrook	7.96	17,000 sq. ft. church and meeting rooms
74	TM 4976; RPL4	Leeds and Strausss TM	North side of Olive Hill Road, near intersection with SR-76, Bonsall	45.76	17 SFR lots – TM time extension until 09/13/2009
75	TM 5398	Murray Davidson	3956 Pala Mesa Road, Bonsall	4.28	7 lots
76	TPM 20173	Shamrock Partners TPM	Shamrock Road, Bonsall	10	3 lots
77	TPM 20851	Crook TPM	32179 Shamrock Road		5 lots
78	TPM 20729	Tabata Bonsall TPM RPL1	5546 Mission Road	33.75	4 lots
79	TPM 20874	Berezousky TPM (311 Same as one in original latch)	4040 Pala Mesa Drive, Fallbrook	3.11	Subdivision of 3.11 acre into 4 residential lots. Existing SFR on site
80	TPM 20932	Murray Davidson TPM	3956 Pala Mesa Road, Fallbrook		Subdivision of 1 lot into 4 SFR lots plus a remainder lot
81	TPM 21076	Sumac TPM	3111 Sumac Road		4 lots
82	S 03-024	Janikowski SFR	9686 Pala Road (SR 76), Fallbrook, on north side of SR 76	5.12	3,200 s.f. SFR
83	TPM 19827	Kratochvid TPM; expired map	Old Highway 395	12.3	4 lots
84	TPM 20319	Kohl TPM	7641 Mount Ararat Way, Bonsall	9.71	4 lots plus remainder

#	Project Reference	Project Name	Location	Area (acres)	Proposed Improvements
85	TPM 20541	Woodhead TPM	Mt. Ararat Way, Bonsall	12.54	4 lots plus remainder
86	TPM 20596	Rockefeller TPM	9590 Lilac Way, VC	5	2 lots
87	TPM 20763	McNulty TPM	32171 Dos Niñas	5.19	2 lots
88	TPM 20799	Stehly Caminito Quieto TPM	32009 Camto Quieto at West Lilac Road	11.69	4 lots
89	TPM 20845	Sanders TPM	West Lilac Road, 1.25 miles west of Old Highway 395		4 lots plus remainder lot
90	S 02-061	Pala Shopping Center	On Old Highway 395 just northwest of the intersection of I-15 and SR 76	3.88	Addition of 5 commercial buildings to an existing commercial site with grocery store.
91	TM 5489	Monserate TM	3624 Monserate Hill Road	24.6	7 SFR
92	TPM 21075	Dimitri, Diffendale, and Kirk TPM	Monserate Hill Road and Monserate Place		4 lots
93	TPM 20994	Madrigal TPM	1055 Rainbow Valley Boulevard near Old Hwy 395		3 lots
94	MUP 07-009	Singh Power Plant	4 miles NE of I-15 on Pala Del Norte Road, north of SR 76	8.5	Power Generation facility
95	37-AA-0032	Gregory Landfill	Approximately 3.5 miles east of I-15 on SR-76	1,770	Landfill site for solid waste

TM = Tentative Map; S = Site Plan; REZ = Rezone; MUP = Major Use Permit; TPM = Tentative Parcel Map; ZAP = Minor Use Permit; RPL = Replacement Map; MFR = multi-family residential; SFR = single-family residential
NA = Not available

The individual cumulative project locations are shown on **Figure 19**. The SANDAG Series 10 Year 2030 cumulative map is included in **Appendix L**. The combined cumulative project volumes are shown on **Figures 20a, 20b, and 20c**.

Figure 19: Cumulative Project Locations



Source: Helix

Figure 20a: Cumulative Project Volumes

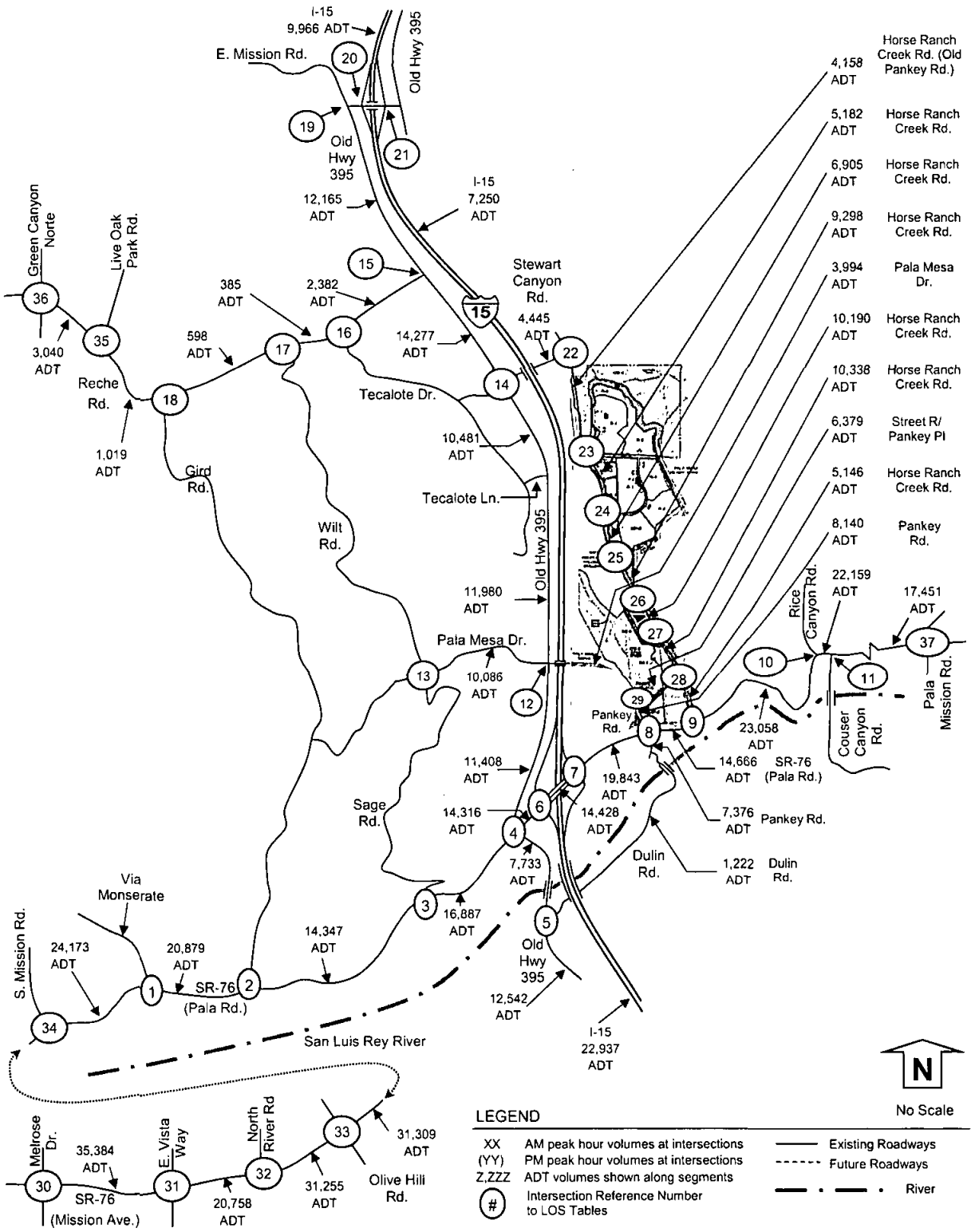


Figure 20b: Cumulative Project Volumes

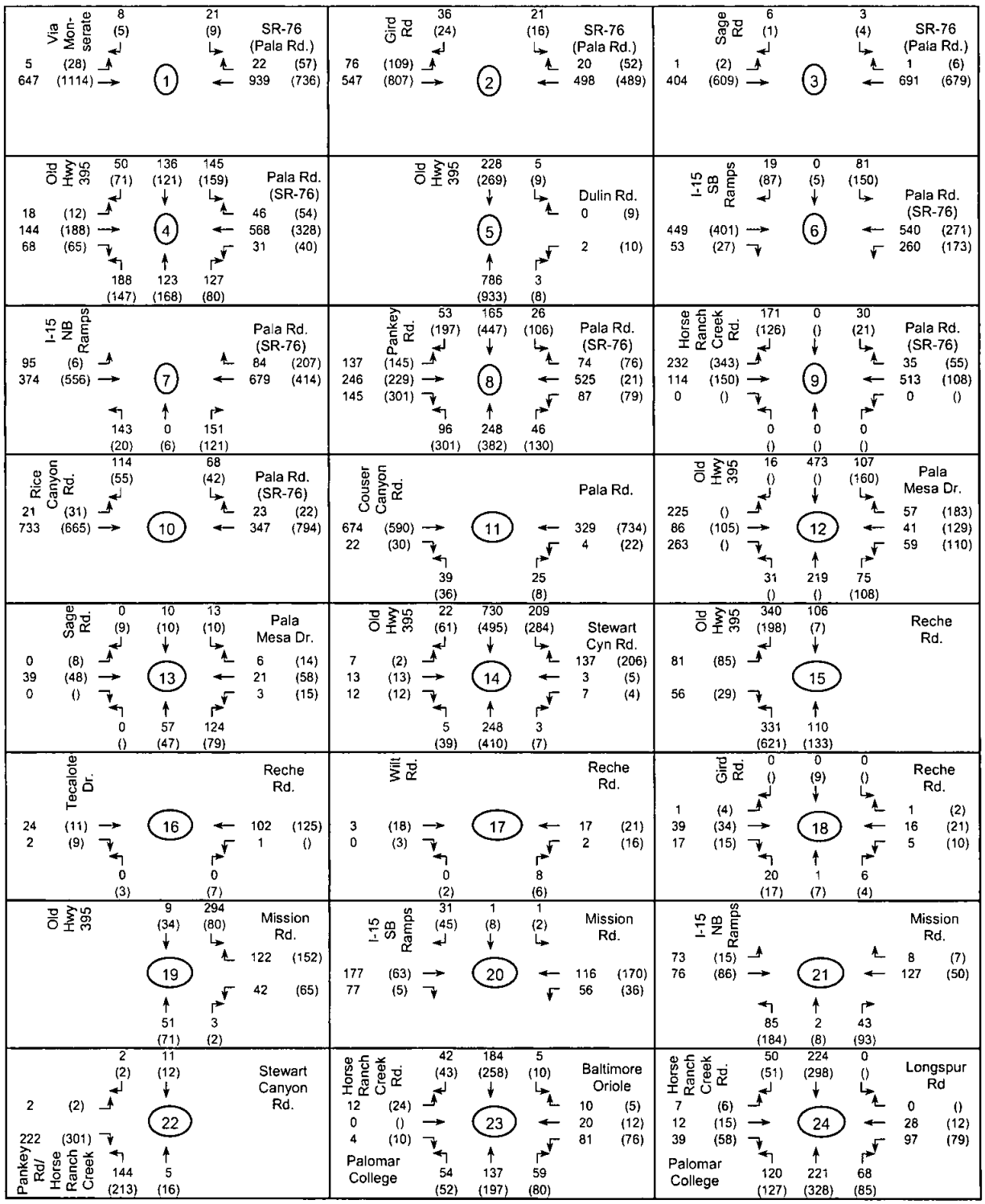
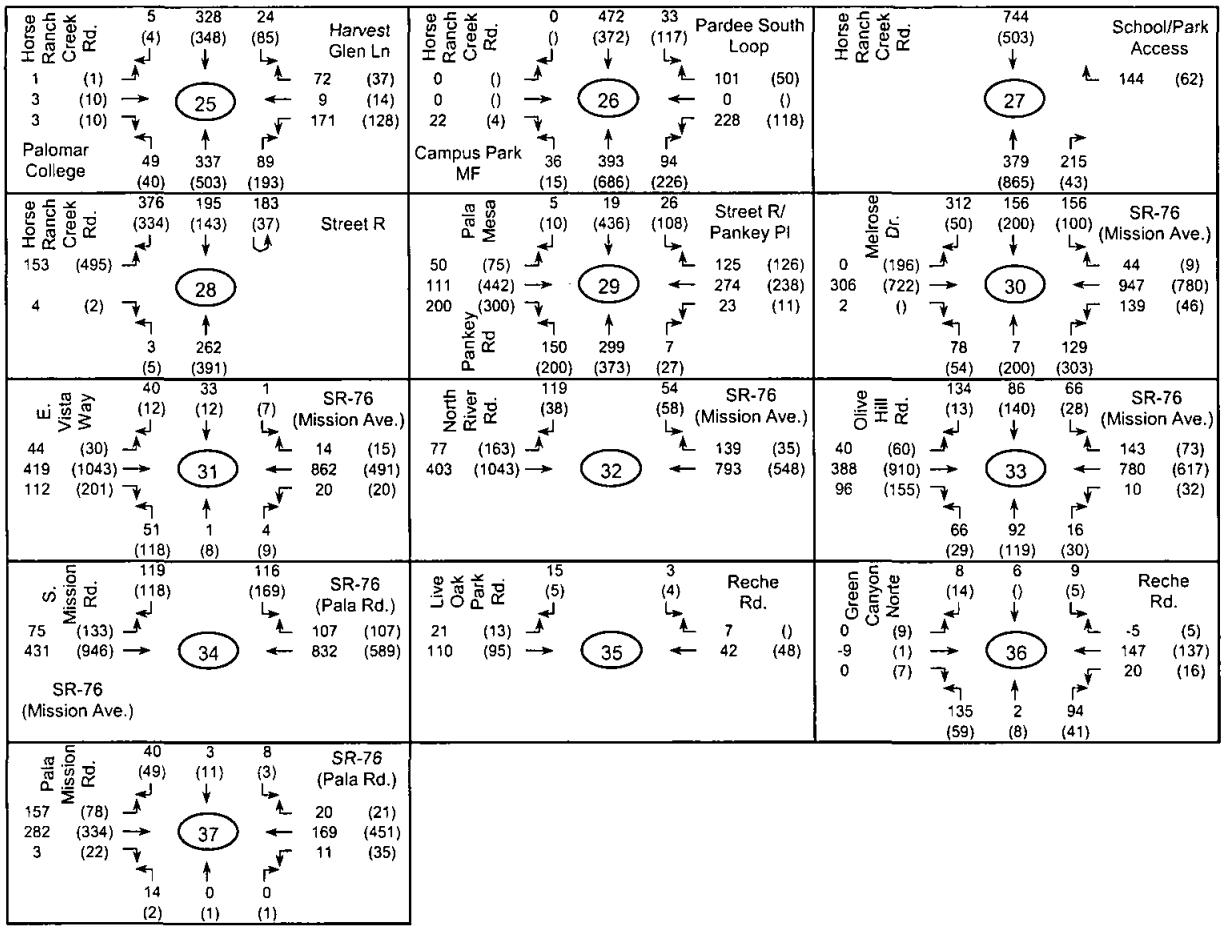


Figure 20c: Cumulative Project Volumes



3.5.2 Existing + Cumulative Conditions Analysis

The existing + cumulative traffic conditions were determined by adding the SANDAG traffic model cumulative traffic volumes onto the existing traffic. The previously described 95 cumulative projects are included in the SANDAG model.

Roadway improvements already under construction (widening of SR-76 from 2 to 4 lanes by the Granite Construction Company) or roadway improvements needed to achieve access to the project (Horse Ranch Creek Road, Pala Mesa Drive, Pankey Place and all associated internal intersections) were incorporated into the analysis. These configurations are shown in **Figures 21a, and 21b**. Other roadway improvements are planned by the Pala Tribe and Caltrans; however, these improvements were not incorporated into the analysis. Documents describing the planned improvements by other cumulative project applicants are included in **Appendix M**. The other cumulative project improvements not included in this analysis include (with a brief summary of the improvement):

1) Pala Tribe (various improvements along SR-76)
2) Palomar College (Horse Ranch Creek Road and other off-site)
3) Caltrans SR-76 Middle Project (widen SR-76 to 4 lanes from Melrose Drive to S. Mission Road)
4) Caltrans SR-76 East Project (widen SR-76 to 4 lanes from S. Mission Road to the easterly ramps at I-15).

Unknown improvements from other cumulative projects that will generate significant amounts of traffic are also not included. The other significant cumulative projects include (with cumulative project reference):

1) Meadowood (#1)
2) Campus Park West (#2)
3) Pala Mesa Resort (#11)
4) Palomar College (#26)
5) Warner Ranch (#45)
6) Pauma Tribe (#46)
7) Pala Shopping Center (#90)
8) Gregory Landfill (#95)

The reader should note that this is a conservative (i.e., assessed impacts are greater) cumulative analysis in that it includes all of the traffic projected as resulting from cumulative projects but does not assume the mitigation proposed by these other projects. In other words, the analysis is conservative because existing, rather than projected improved roadway conditions, provide the basis for analysis. (The reader should also note that applications submitted to the County, and included within projected cumulative conditions, frequently assume higher densities [with higher associated traffic generation] than what is ultimately allowed following project approval).

The peak hour intersection volumes and daily traffic volumes for this scenario of existing + cumulative projects are shown in **Figures 22a, 22b, and 22c**. The LOS calculated for the intersections, roadway segments, state route segments, and freeway segments are shown in **Tables 19a, 19b, 20, 21, and 22**, respectively.

Figure 21a: Existing + Cumulative Planned Roadway Improvements

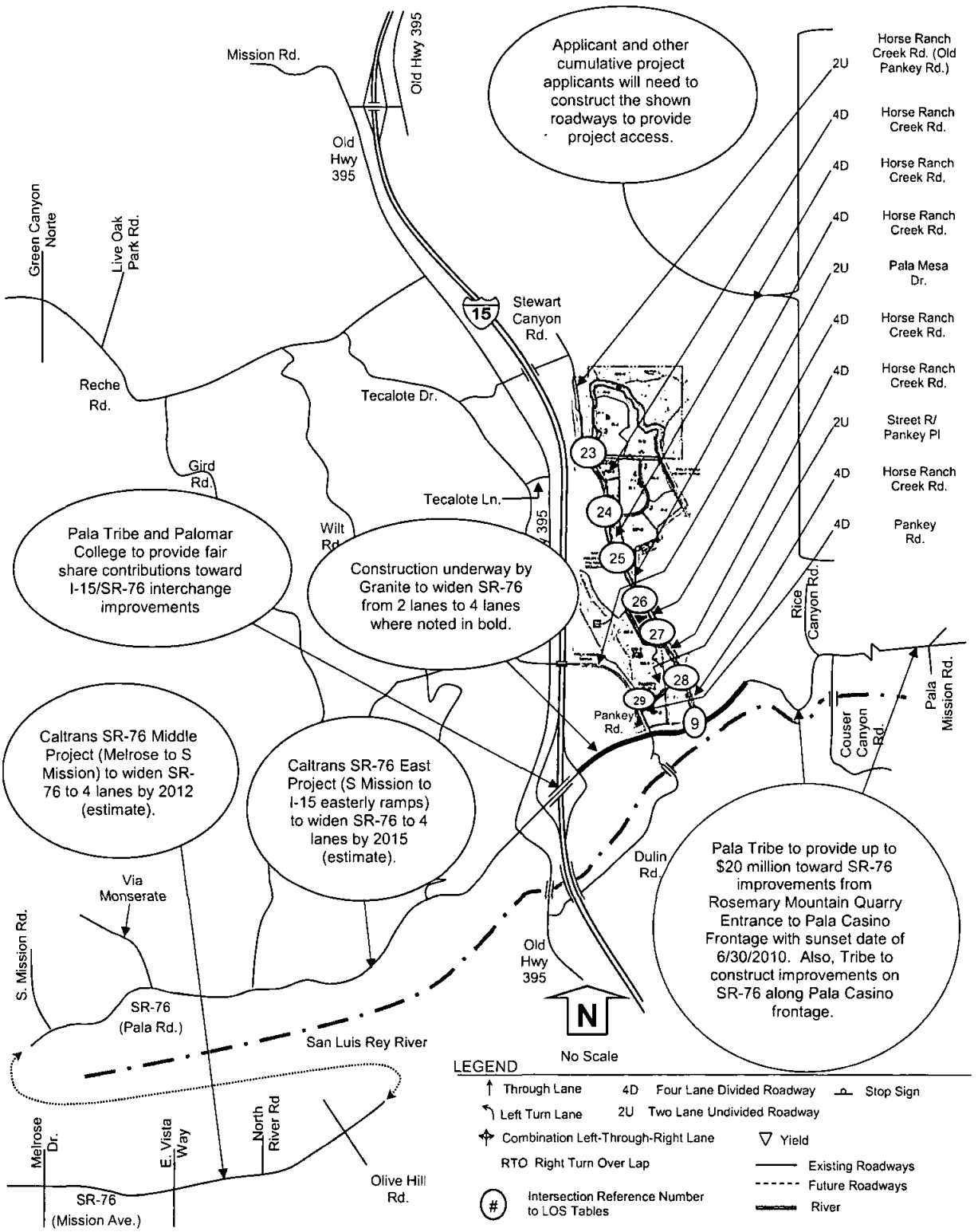


Figure 21b: Existing + Cumulative Planned Roadway Improvements

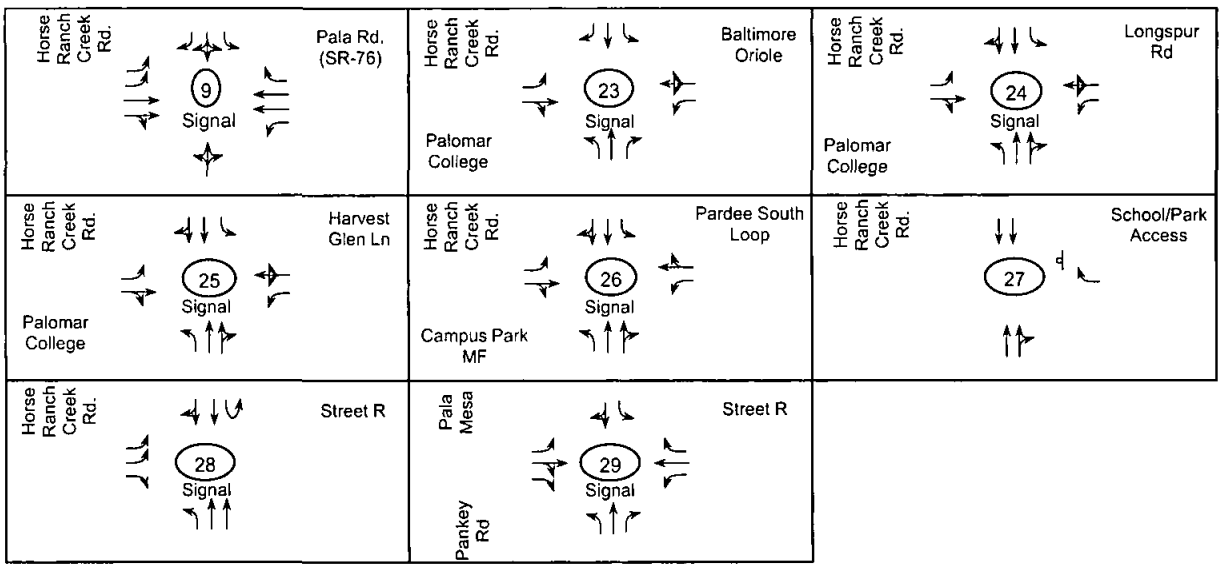


Figure 22a: Existing + Cumulative Volumes

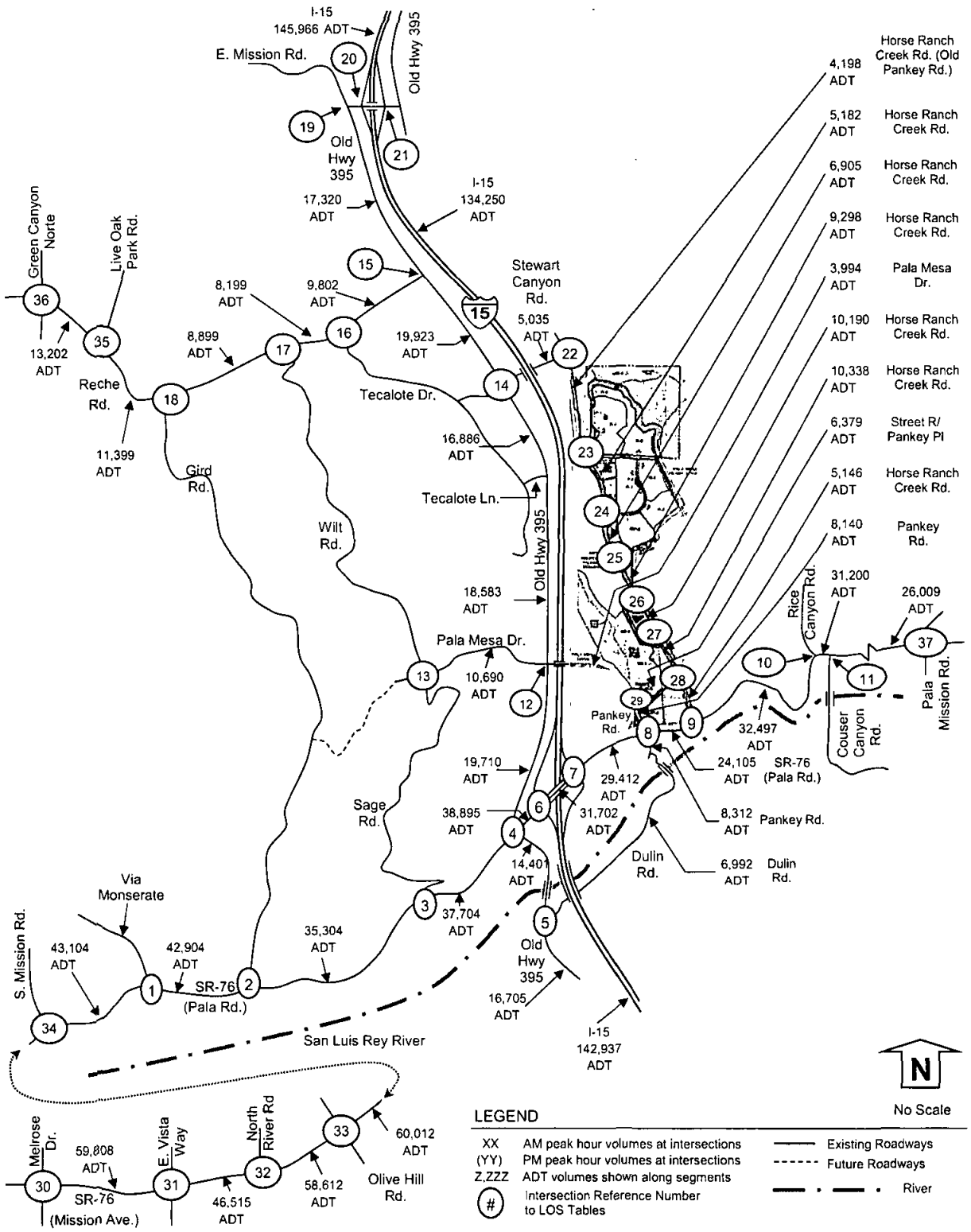


Figure 22b: Existing + Cumulative Volumes

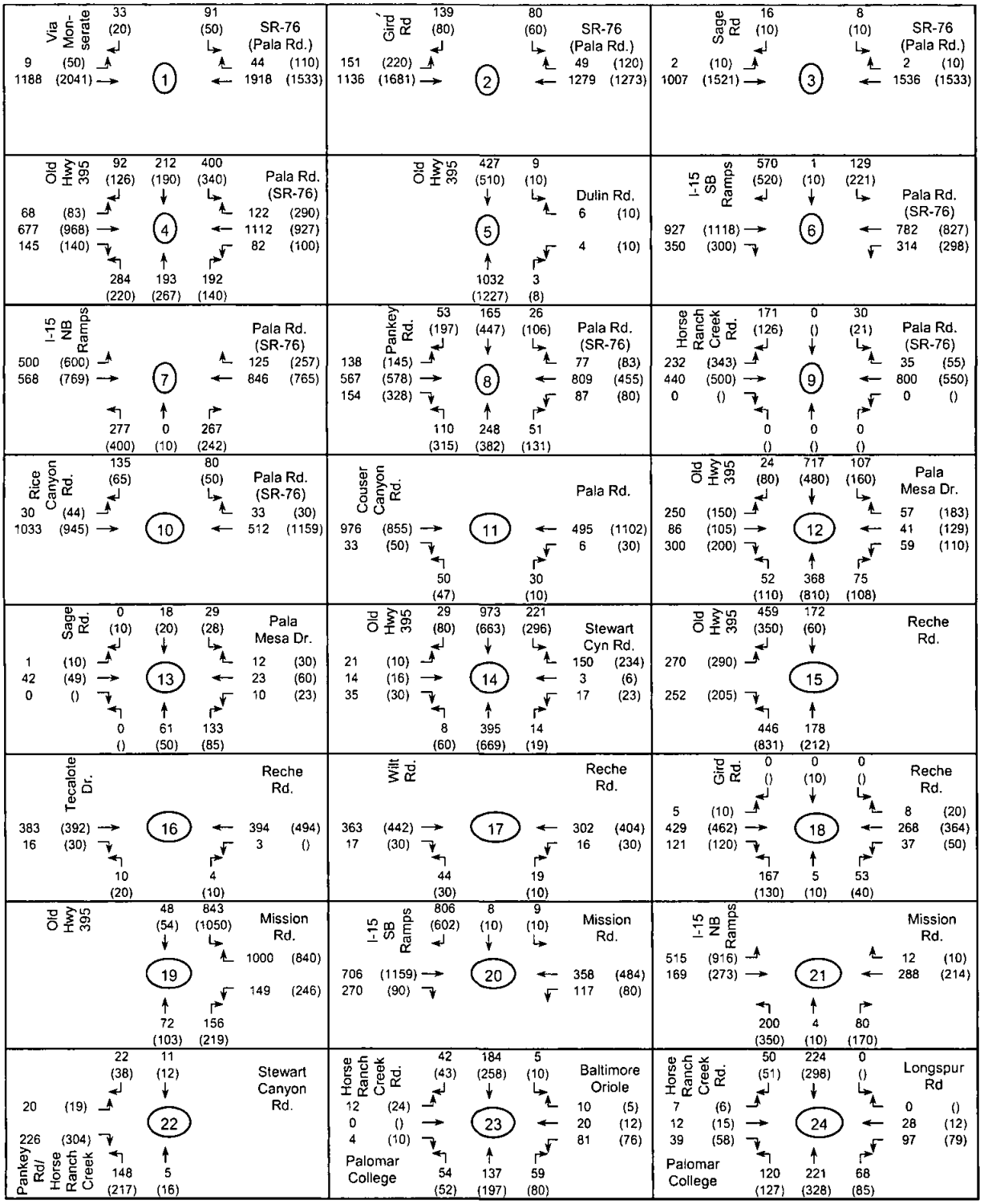


Figure 22c: Existing + Cumulative Volumes

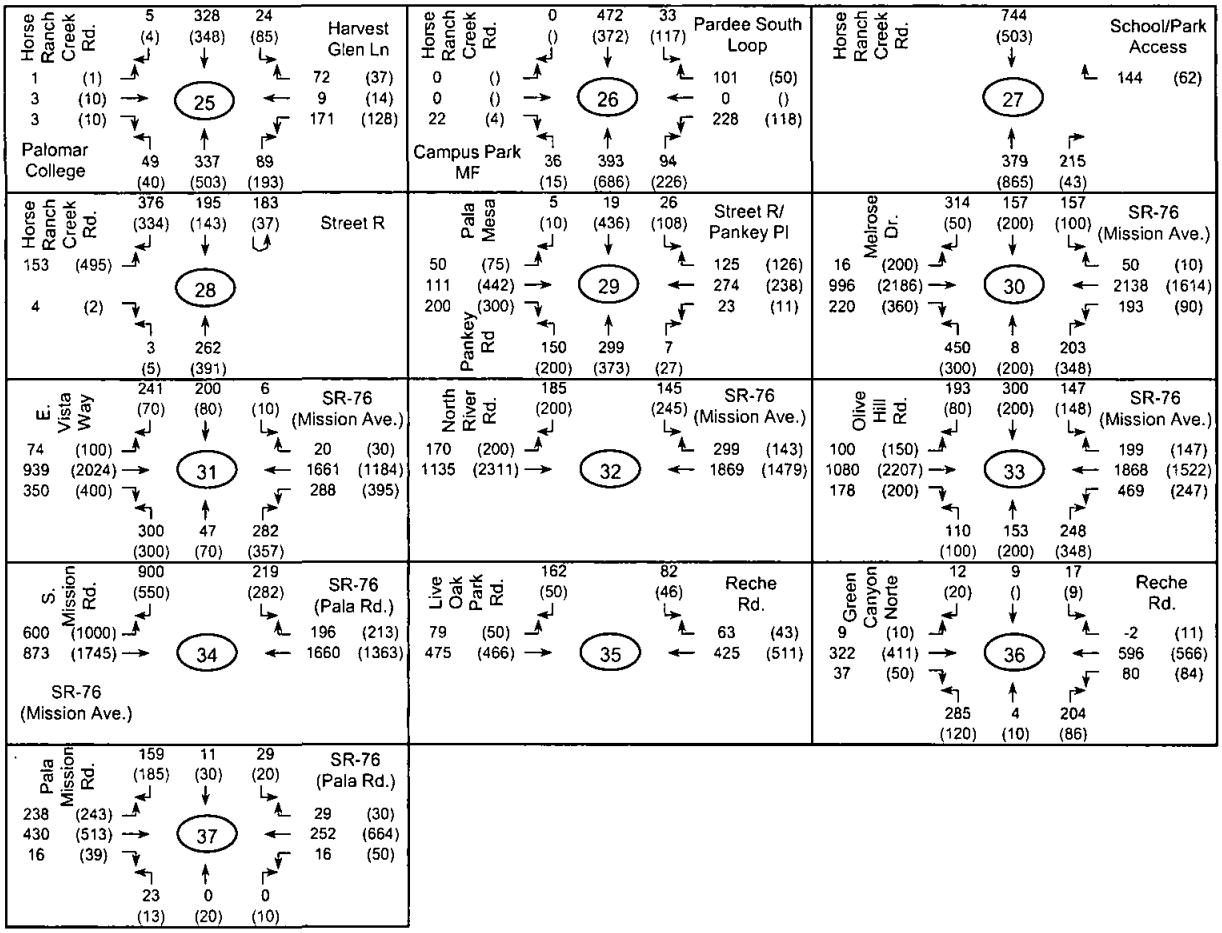


TABLE 19A: EXISTING + CUMULATIVE INTERSECTION LEVEL OF SERVICE (PRIOR TO MITIGATION)

Intersection and (Analysis)[1]	Movement	Peak Hour	Existing + Cumulative Delay[2]	Existing + Cumulative LOS[3]
1) SR-76 (Pala Rd) at	SB LR	AM	>500	F
Via Monserate (U)	SB LR	PM	>500	F
	All	AM	>500	F
	All	PM	>500	F
2) SR-76 (Pala Rd) at	All	AM	43.4	D
Gird Rd (S)	All	PM	97.7	F
3) SR-76 (Pala Rd) at	SB LR	AM	125.8	F
Sage Rd (U)	SB LR	PM	>500	F
	All	AM	1.2	A
	All	PM	3.5	A
4) SR-76 (Pala Rd) at	All	AM	246.9	F
Old Hwy 395 (S)	All	PM	232.4	F
5) Old Hwy 395 at	WB LR	AM	25.6	D
Dulin Rd (U)	WB LR	PM	40.6	E
6) SR-76 (Pala Rd) at	All	AM	88.9	F
I-15 SB Ramps (S)	All	PM	120.2	F
7) SR-76 (Pala Rd) at	All	AM	73.3	E
I-15 NB Ramps (S)	All	PM	107.9	F
8) SR-76 (Pala Rd) at	NB LTR	AM	>500	F
Pankey Road (U)	NB LTR	PM	>500	F
	SB LTR	AM	29.7	C
	SB LTR	PM	165.9	F
9) SR-76 (Pala Rd) at	All	AM	16.3	B
Horse Ranch Creek Rd (U)	All	PM	15.3	B
10) SR-76 (Pala Rd) at	SB LR	AM	154.3	F
Rice Canyon Road (U)	SB LR	PM	472.0	F
11) SR-76 (Pala Rd) at	NB LR	AM	55.0	F
Couser Canyon Road (U)	NB LR	PM	233.2	F
12) Old Highway 395 at	EB LTR	AM	>500	F
Pala Mesa Dr (U)	EB LTR	PM	>500	F
	WB LTR	AM	>500	F
	WB LTR	PM	>500	F
13) Pala Mesa Dr at	NB LTR	AM	9.9	A
Sage Road (U)	SB LTR	AM	11.3	B
	NB LTR	PM	10.0	B
	SB LTR	PM	11.3	B
14) Old Highway 395 at	WB LTR	AM	118.1	F
Stewart Canyon Road (U)	WB LTR	PM	>500	F
15) Old Highway 395 at	EB LR	AM	>500	F
Reche Road (U)	EB LR	PM	>500	F
	All	PM	>500	F
	All	PM	>500	F
16) Reche Road at	NB LR	AM	14.6	B
Tecalote Dr (U)	NB LR	PM	16.2	C
17) Reche Road at	NB LR	AM	14.8	B
Wilt Road (U)	NB LR	PM	18.2	C
18) Reche Road at	All	AM	15.7	B
Gird Road (S)	All	PM	15.0	B
19) Mission Road at	SB L	AM	45.1	D
Old Highway 395 (S)	SB L	PM	105.2	F
20) Mission Road at	SB LTR	AM	56.2	E
I-15 SB Ramps (S)	SB LTR	PM	41.6	D
21) Mission Road at	All	AM	26.5	C
I-15 NB Ramps (S)	All	PM	84.8	F

Continued On Next Page

TABLE 19B: EXISTING + CUMULATIVE INTERSECTION LEVEL OF SERVICE (PRIOR TO MITIGATION)

Intersection and (Analysis)[1]	Movement	Peak Hour	Existing + Cumulative Delay[2]	Existing + Cumulative LOS[3]
22) Stewart Canyon Rd at	EB LR	AM	9.9	A
HRCR/Pankey Road (U)	EB LR	PM	10.7	B
23) Horse Ranch Crk Rd at	WB LR	AM	13.7	B
Baltimore Oriole (U)	WB LR	PM	13.6	B
24) Horse Ranch Crk Rd at	All-Way	AM	17.4	B
Longspur Rd (U)	All-Way	PM	15.7	B
25) Horse Ranch Crk Rd at	All-Way	AM	15.5	B
Harvest Glen Ln (U)	All-Way	PM	15.9	B
26) Horse Ranch Crk Rd at	WB LR	AM	15.9	B
Pardee South Loop (U)	WB LR	PM	14.7	B
27) Horse Ranch Crk Rd at	WB LR	AM	11.8	B
School/Park Access (U)	WB LR	PM	12.7	B
28) Horse Ranch Crk Rd	All-Way	AM	6.8	A
at Street R (U)	All-Way	PM	8.5	A
29) Pankey/Pala Mesa Dr	WB LR	AM	23.2	C
at Street R (U)	WB LR	PM	34.8	C
30) SR-76 (Mission Ave) at	All	AM	128.2	F
Melrose Drive (S)	All	PM	78.0	E
31) SR-76 (Mission Ave) at	All	AM	276.0	F
E. Vista Way (S)	All	PM	254.9	F
32) SR-76 (Mission Ave) at	All	AM	308.6	F
North River Rd (S)	All	PM	256.5	F
33) SR-76 (Mission Ave) at	All	AM	232.6	F
Olive Hill Rd (S)	All	PM	176.8	F
34) SR-76 (Mission Ave) at	All	AM	39.6	D
S. Mission Rd (S)	All	PM	80.3	F
35) Reche Rd at	SB LR	AM	36.8	E
Live Oak Park Rd (U)	SB LR	PM	22.8	C
36) Reche Rd at	All	AM	26.5	C
Green Canyon Norte (S)	All	PM	24.3	C
37) SR-76 (Pala Rd.) at	All	AM	35.2	D
Pala Mission Rd. (S)	All	PM	40.4	D

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized 2) Delay - HCM Control Delay in seconds. 3) LOS: Level of Service.
DNE: Does Not Exist. NA: Not Applicable

TABLE 20: EXISTING + CUMULATIVE SEGMENT ADT VOLUMES AND LEVEL OF SERVICE (PRIOR TO MITIGATION)

Segment	Sept 2005 Circulation Element Class.	Existing # of Lanes [Proposed by Other Projects]	Existing + Cumulative Daily Volume	LOS E Capacity	V/C	LOS
Dulin Road						
Old Highway 395 to Pankey Road	Light Collector	2	6,992	16,200	0.43	C
Old Highway 395						
East Mission Road to Reche Road	Collector	2	17,320	16,200	1.07	F
Reche Road to Stewart Canyon Road	Collector	2	19,923	16,200	1.23	F
Stewart Canyon Road to Tecalote Lane	Collector	2	16,886	16,200	1.04	F
Tecalote Lane to Pala Mesa Drive	Collector	2	18,583	16,200	1.15	F
Pala Mesa Drive to SR-76 (Pala Road)	Collector	2	19,710	16,200	1.22	F
SR-76 (Pala Road) to Dulin Road	Collector	2	14,401	16,200	0.89	E
Dulin Road to W. Lilac Road	Rural Collector	2	16,705	16,200	1.03	F
Reche Road						
Green Canyon Norte to Live Oak Park Road	Rural Collector	2	13,202	16,200	0.81	E
Live Oak Park Road to Gird Road	Rural Collector	2	11,399	16,200	0.70	E
Gird Road to Wilt Road	Rural Collector	2	8,899	16,200	0.55	D
Wilt Road to Tecalote Road	Rural Collector	2	8,199	16,200	0.51	D
Tecalote Drive to Old Highway 395	Rural Collector	2	9,802	16,200	0.61	D
Stewart Canyon Road						
Old Hwy 395 to Horse Ranch Creek Rd	Light Collector	2	5,731	16,200	0.35	C
Pankey Road						
Street R/Pankey Place to SR-76 (Pala Rd)	(Collector)	[Pappas 4 lanes]	8,326	34,200	0.24	A
SR-76 (Pala Road) to Shearer Crossing	Light Collector	2	7,175	16,200	0.44	D
Horse Ranch Creek Road						
Stewart Canyon Rd to Baltimore Oriole (#23)	Light Collector	2	4,831	16,200	0.30	C
Baltimore Oriole (#23) to Longspur Rd (#24)	(Boulevard 4.2A)	[PPP 4 lanes]	5,436	27,000	0.20	Un
Longspur Rd (#24) to Harvest Glen Ln (#25)	(Boulevard 4.2A)	[PPP 4 lanes]	6,705	27,000	0.25	Un
Harvest Glen Ln (#25) to Intersection (#26)	(Boulevard 4.2A)	[PPP 4 lanes]	9,092	27,000	0.34	Un
Intersection (#26) to Park/School (#27)	(Boulevard 4.2A)	[PPP 4 lanes]	10,925	27,000	0.40	Un
Park/Sch (#27) to Street R/Pankey Pl (#28)	(Boulevard 4.2A)	[PPP 4 lanes]	11,186	27,000	0.41	Un
Street R/Pankey Pl (#28) to SR-76 (Pala Rd)	(Boulevard 4.2A)	[PPP 4 lanes]	6,188	27,000	0.23	Un
Pala Mesa Drive						
Wilt Rd/Sage Rd to Old Highway 395	(Light Collector)	2	10,690	16,200	0.66	D
Old Highway 395 to Street R/Pankey Pl	(Light Collector)	2	4,405	16,200	0.27	C
Street R/Pankey Place						
Pala Mesa/Pankey to Horse Ranch Creek Rd	(Light Collector)	2	6,219	16,200	0.38	C

Notes: (proposed GP classification). [proposed party to implement improvement. PPP = Pardee, Passerelle, and Palomar] [Granite 4 lanes until their driveway] LOS: Level of Service. V/C: Volume to Capacity ratio. Daily volumes is a 24 hour volume. LOS for proposed classification is classification is identiified as "Un" as under capacity and "Ov" for over capacity.

TABLE 21: EXISTING + CUMULATIVE STATE ROUTE VOLUMES AND LEVEL OF SERVICE

State Route 76	Lanes in	E+C	AM (Eastbound)				E+C	AM (Westbound)				E+C	PM (Eastbound)				E+C	PM (Westbound)			
Study Limits (cumulative)	each dir	Vol	Dir	Cap	v/c	LOS	Vol	Dir	Cap	v/c	LOS	Vol	Dir	Cap	v/c	LOS	Vol	Dir	Cap	v/c	LOS
Melrose Dr to E. Vista Way	1	1357	EB	1300	1.04	F	2397	WB	1300	1.84	F	2625	EB	1300	2.02	F	1711	WB	1300	1.32	F
E. Vista Way to North River Rd	1	1172	EB	950	1.23	F	1953	WB	950	2.06	F	2020	EB	950	2.13	F	1398	WB	950	1.47	F
North River Rd to Olive Hill Rd	1	1371	EB	950	1.44	F	2389	WB	950	2.51	F	2550	EB	950	2.68	F	1583	WB	950	1.67	F
Olive Hill Rd to S Mission Rd	1	1471	EB	950	1.55	F	2527	WB	950	2.66	F	2521	EB	950	2.65	F	1814	WB	950	1.91	F
S Mission Rd to Via Monserate	1	1045	EB	950	1.10	F	1687	WB	950	1.78	F	2200	EB	950	2.32	F	1437	WB	950	1.51	F
Via Monserate to Gird Rd	1	1091	EB	950	1.15	F	1745	WB	950	1.84	F	1998	EB	950	2.10	F	1294	WB	950	1.36	F
Gird Rd to Sage Rd	1	1082	EB	950	1.14	F	1288	WB	950	1.36	F	1321	EB	950	1.39	F	1169	WB	950	1.23	F
Sage Rd to Old Hwy 395	1	1169	EB	950	1.23	F	1310	WB	950	1.38	F	1444	EB	950	1.52	F	1381	WB	950	1.45	F
Old Hwy 395 to I-15 SB Ramps	2	1319	EB	2050	0.64	C	1247	WB	2028	0.61	C	1454	EB	2050	0.71	C	1498	WB	2028	0.74	D
I-15 SB Ramps to I-15 NB Ramps	1	939	EB	950	0.99	E	837	WB	950	0.88	E	1222	EB	950	1.29	F	1086	WB	950	1.14	F
I-15 NB Ramps to Pankey Rd	2	641	EB	3100	0.21	A	817	WB	3030	0.27	A	1106	EB	3100	0.36	B	780	WB	3030	0.26	A
Pankey Rd to Horse Ranch Creek Rd	2	384	EB	1806	0.21	A	965	WB	2028	0.48	B	934	EB	1806	0.52	C	1050	WB	2028	0.52	C
Horse Ranch Creek Rd to Rice Cyn	1	564	EB	950	0.59	C	1139	WB	950	1.20	F	1219	EB	950	1.28	F	1291	WB	950	1.36	F
Rice Cyn to Couser Cyn	1	1686	EB	950	1.77	F	800	WB	950	0.84	D	977	EB	950	1.03	F	1282	WB	950	1.35	F
Couser Cyn to Pala Mission Rd	1	823	EB	950	0.87	E	653	WB	950	0.69	C	813	EB	950	0.86	D	1203	WB	950	1.27	F

Source: SANDAG Year 2030 Cumulative Map. Notes: Dir = Direction. Vol = Volume. Cap = Capacity. v/c = volume to capacity ratio. LOS = Level of Service. E: Existing. C: Cumulative

TABLE 22: EXISTING + CUMULATIVE FREEWAY VOLUMES AND LEVEL OF SERVICE (PRIOR TO MITIGATION)

Freeway	I-15				I-15				I-15			
Segment	Rainbow Valley Blvd to Mission Rd				Mission Rd to SR-76 (Pala Rd)				SR-76 to Escondido Hwy (Old 395)			
Existing (Year 2006)												
ADT	136,000				127,000				120,000			
Peak Hour	A M		P M		A M		P M		A M		P M	
Direction	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
Number of Lanes	4	4	4	4	4	4	4	4	4	4	4	4
Capacity (1)	9400	9400	9400	9400	9400	9400	9400	9400	9400	9400	9400	9400
K Factor (2)	0.0619	0.0619	0.0738	0.0738	0.0619	0.0619	0.0738	0.0738	0.059	0.059	0.0723	0.0723
D Factor (3)	0.1653	0.8347	0.6398	0.3602	0.1653	0.8347	0.6398	0.3602	0.1989	0.8011	0.6955	0.3045
Truck Factor (4)	0.9186	0.9186	0.9186	0.9186	0.9186	0.9186	0.9186	0.9186	0.8977	0.8977	0.8977	0.8977
Peak Hour Volume	1514.87	7649.51	6990.58	3935.61	1414.62	7143.29	6527.97	3675.17	1568.69	6318.13	6721.8	2942.9
Volume to Capacity	0.16116	0.81378	0.74368	0.41868	0.15049	0.75992	0.69446	0.39098	0.16688	0.67214	0.71508	0.31307
LOS	A	D	C	A	A	C	C	A	A	C	C	A
Cumulative Pk Hr Vol	311	305	419	464	198	252	343	283	710	956	1340	816
Existing+Cumulative												
Peak Hour Volume	1825.87	7954.51	7409.58	4399.61	1612.62	7395.29	6870.97	3958.17	2278.69	7274.13	8061.8	3758.9
Volume to Capacity	0.19424	0.84622	0.78825	0.46804	0.17156	0.78673	0.73095	0.42108	0.24241	0.77384	0.85764	0.39988
LOS	A	D	C	B	A	C	C	B	A	C	D	A

Notes: (1) Capacity of 2,350 passenger cars per hour per lane (pcphpl) from Caltrans' Guide for the Preparation of Traffic Impact Studies, Dec 2002. (2) Latest K factor from Caltrans (based on 2005 data), which is the percentage of Annual Average Daily Traffic (AADT) in both directions. (3) Latest D factor from Caltrans (based on 2005 data), which when multiplied by K and ADT will provide peak hour volume. (4) Latest truck factor from Caltrans (based on 2000 data).

Under existing + cumulative conditions, all study intersections and roadway segments were calculated to operate at LOS D with the exception of:

Intersections

1) Intersection of SR-76 (Pala Rd) / Via Monserate (LOS F AM & PM)
2) Intersection of SR-76 (Pala Rd) / Gird Rd (LOS F PM)
3) Intersection of SR-76 (Pala Rd) / Sage Rd (LOS F AM & PM)
4) Intersection of SR-76 (Pala Rd) / Old Highway 395 (LOS F AM & PM)
5) Intersection of Old Highway 395 / Dulin Rd (LOS E PM)
6) Intersection of SR-76 (Pala Rd) / I-15 SB Ramp (LOS F AM & PM)
7) Intersection of SR-76 (Pala Rd) / I-15 NB Ramp (LOS E AM & LOS F PM)
8) Intersection of SR-76 (Pala Rd) / Pankey Rd (LOS F AM & PM)
9) Intersection of SR-76 (Pala Rd) / Rice Canyon Rd (LOS F AM & PM)
10) Intersection of SR-76 (Pala Rd) / Couser Canyon Rd (LOS F AM & PM)
11) Intersection of Old Highway 395 / Pala Mesa Dr (LOS F AM & PM)
12) Intersection of Old Highway 395 / Stewart Canyon Rd (LOS F AM & PM)
13) Intersection of Old Highway 395 / Reche Rd (LOS F AM & PM)
14) Intersection of Mission Rd / Old Highway 395 (LOS F PM)
15) Intersection of Mission Rd / I-15 Southbound Ramp (LOS E AM)
16) Intersection of Mission Rd / I-15 Northbound Ramp (LOS F PM)
17) Intersection of SR-76 (Mission Ave) / Melrose Dr (LOS F AM & LOS E PM)
18) Intersection of SR-76 (Mission Ave) / E. Vista Way (LOS F AM & PM)
19) Intersection of SR-76 (Mission Ave) / North River Rd (LOS F AM & PM)
20) Intersection of SR-76 (Mission Ave) / Olive Hill Rd (LOS F AM & PM)
21) Intersection of SR-76 (Mission Ave) / S Mission Rd (LOS F PM)
22) Intersection of Reche Rd / Live Oak Park Rd (LOS E AM)

Segments

1) Segment of Old Hwy 395 from E Mission Rd to Reche Rd (LOS F)
2) Segment of Old Hwy 395 from Reche Rd to Stewart Canyon Rd (LOS F)
3) Segment of Old Hwy 395 from Stewart Canyon Rd to Tecalote Ln (LOS F)
4) Segment of Old Hwy 395 from Tecalote Ln to Pala Mesa Dr (LOS F)
5) Segment of Old Hwy 395 from Pala Mesa Dr to SR-76 (LOS F)
6) Segment of Old Hwy 395 from SR-76 to Dulin Rd (LOS E)
7) Segment of Old Hwy 395 from Dulin Rd to W Lilac Rd (LOS F)
8) Segment of Reche Rd from Green Canyon Norte to Live Oak Park Rd (LOS E)
9) Segment of Reche Rd from Live Oak Park Rd to Gird Rd (LOS E)

State Routes

10) State Route 76 from Melrose Dr to E Vista Way (LOS F AM & PM)
11) State Route 76 from E Vista Way to North River Rd (LOS F AM & PM)
12) State Route 76 from North River Rd to Olive Hill Rd (LOS F AM & PM)
13) State Route 76 from Olive Hill Rd to S Mission Rd (LOS F AM & PM)
14) State Route 76 from S Mission Rd to Via Monserate (LOS F AM & PM)
15) State Route 76 from Via Monserate to Gird Rd (LOS F AM & PM)
16) State Route 76 from Gird Rd to Sage Rd (LOS F AM & PM)
17) State Route 76 from Sage Rd to Old Hwy 395 (LOS F AM & PM)
18) State Route 76 from I-15 SB Ramp to I-15 NB Ramp (LOS E AM & LOS F PM)
19) State Route 76 from Horse Ranch Creek Rd to Rice Canyon Rd (LOS F AM & PM)
20) State Route 76 from Rice Canyon Rd to Couser Canyon Rd (LOS F AM & PM)
21) State Route 76 from Couser Canyon Rd to Pala Mission Rd (LOS E AM & LOS F PM)

Existing + cumulative LOS calculations are included in **Appendix N.**

3.6 Existing + Cumulative + Project Conditions (Prior to Mitigation)

This scenario accounts for the addition of project traffic onto existing + cumulative traffic for AM, PM and ADT conditions. The long-term project assignment is used in this scenario. The peak hour intersection volumes and daily traffic volumes for this scenario of existing + cumulative + project conditions are shown in **Figures 23a, 23b, and 23c**. The LOS calculated for the intersections, roadway segments, state highway segments, and freeway segments are shown in **Tables 23a, 23b, 24, 25a, 25b, and 26**, respectively.

Under existing + cumulative + project conditions, all study intersections and roadways were calculated to operate at LOS D with the exception of the following to which the project is calculated to have a cumulative impact:

Intersections

1) Intersection of SR-76 (Pala Rd) / Via Monserate (LOS F AM & PM)
2) Intersection of SR-76 (Pala Rd) / Gird Rd (LOS F PM)
3) Intersection of SR-76 (Pala Rd) / Sage Rd (LOS F AM & PM)
4) Intersection of SR-76 (Pala Rd) / Old Highway 395 (LOS F AM & PM)
5) Intersection of Old Highway 395 / Dulin Rd (LOS F PM)
6) Intersection of SR-76 (Pala Rd) / I-15 SB Ramp (LOS F AM & PM)
7) Intersection of SR-76 (Pala Rd) / I-15 NB Ramp (LOS F AM & PM)
8) Intersection of SR-76 (Pala Rd) / Pankey Rd (LOS F AM & PM)
9) Intersection of SR-76 (Pala Rd) / Rice Canyon Rd (LOS F AM & PM)
10) Intersection of SR-76 (Pala Rd) / Couser Canyon Rd (LOS F AM & PM)
11) Intersection of Old Highway 395 / Pala Mesa Dr (LOS F AM & PM)
12) Intersection of Old Highway 395 / Stewart Canyon Rd (LOS F AM & PM)
13) Intersection of Old Highway 395 / Reche Rd (LOS F AM & PM)
14) Intersection of Mission Rd / Old Highway 395 (LOS F PM)
15) Intersection of Mission Rd / I-15 Southbound Ramp (LOS E AM & LOS F PM)
16) Intersection of Mission Rd / I-15 Northbound Ramp (LOS F PM)
17) Intersection of SR-76 (Mission Ave) / Melrose Dr (LOS F AM & PM)
18) Intersection of SR-76 (Mission Ave) / E. Vista Way (LOS F AM & PM)
19) Intersection of SR-76 (Mission Ave) / North River Rd (LOS F AM & PM)
20) Intersection of SR-76 (Mission Ave) / Olive Hill Rd (LOS F AM & PM)
21) Intersection of SR-76 (Mission Ave) / S Mission Rd (LOS F PM)
22) Intersection of Reche Rd / Live Oak Park Rd (LOS E AM)

Segments

1) Segment of Old Hwy 395 from E Mission Rd to Reche Rd (LOS F)
2) Segment of Old Hwy 395 from Reche Rd to Stewart Canyon Rd (LOS F)
3) Segment of Old Hwy 395 from Stewart Canyon Rd to Tecalote Ln (LOS F)
4) Segment of Old Hwy 395 from Tecalote Ln to Pala Mesa Dr (LOS F)
5) Segment of Old Hwy 395 from Pala Mesa Dr to SR-76 (LOS F)
6) Segment of Old Hwy 395 from SR-76 to Dulin Rd (LOS E)
7) Segment of Old Hwy 395 from Dulin Rd to W Lilac Rd (LOS F)
8) Segment of Reche Rd from Green Canyon Norte to Live Oak Park Rd (LOS E)

9) Segment of Reche Rd from Live Oak Park Rd to Gird Rd (LOS E)
10) Segment of Pankey Rd from SR-76 to Shearer Crossing (LOS E)
11) Segment of Pala Mesa Dr from Wilt Rd/Sage Rd to Old Hwy 395 (LOS E)

State Routes

1) State Route 76 from Melrose Dr to E Vista Way (LOS F AM & PM)
2) State Route 76 from E Vista Way to North River Rd (LOS F AM & PM)
3) State Route 76 from North River Rd to Olive Hill Rd (LOS F AM & PM)
4) State Route 76 from Olive Hill Rd to S Mission Rd (LOS F AM & PM)
5) State Route 76 from S Mission Rd to Via Monserate (LOS F AM & PM)
6) State Route 76 from Via Monserate to Gird Rd (LOS F AM & PM)
7) State Route 76 from Gird Rd to Sage Rd (LOS F AM & PM)
8) State Route 76 from Sage Rd to Old Hwy 395 (LOS F AM & PM)
9) State Route 76 from I-15 SB Ramp to I-15 NB Ramp (LOS F AM & PM)
10) State Route 76 from Horse Ranch Creek Rd to Rice Canyon Rd (LOS F AM & PM)
11) State Route 76 from Rice Canyon Rd to Couser Canyon Rd (LOS E AM & LOS F PM)
12) State Route 76 from Couser Canyon Rd to Pala Mission Rd (LOS F PM)

Existing + cumulative + project LOS calculations and SR-76 peak hour volumes are included in **Appendix O.**

Figure 23a: Existing + Cumulative + Project Volumes

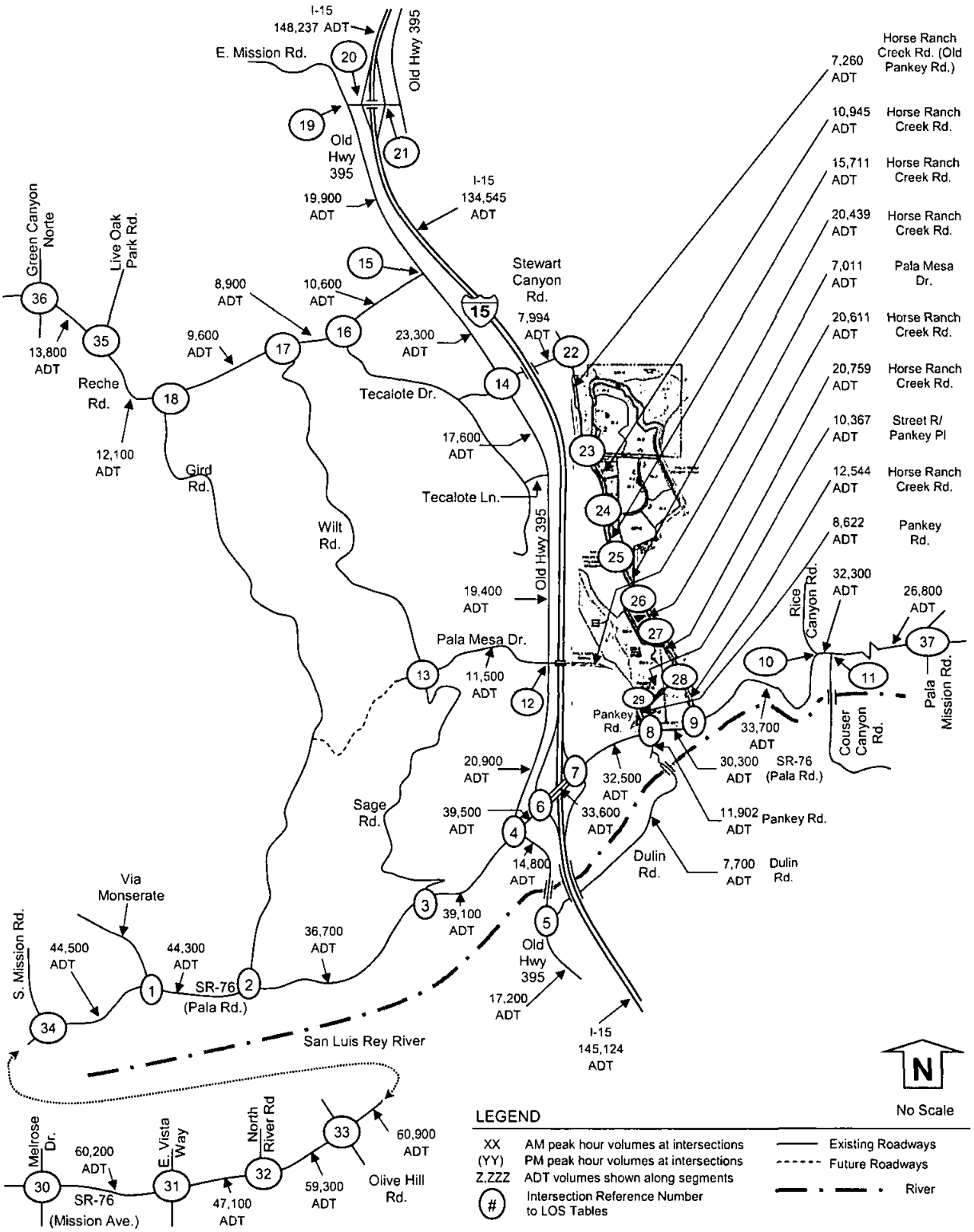


Figure 23b: Existing + Cumulative + Project Volumes

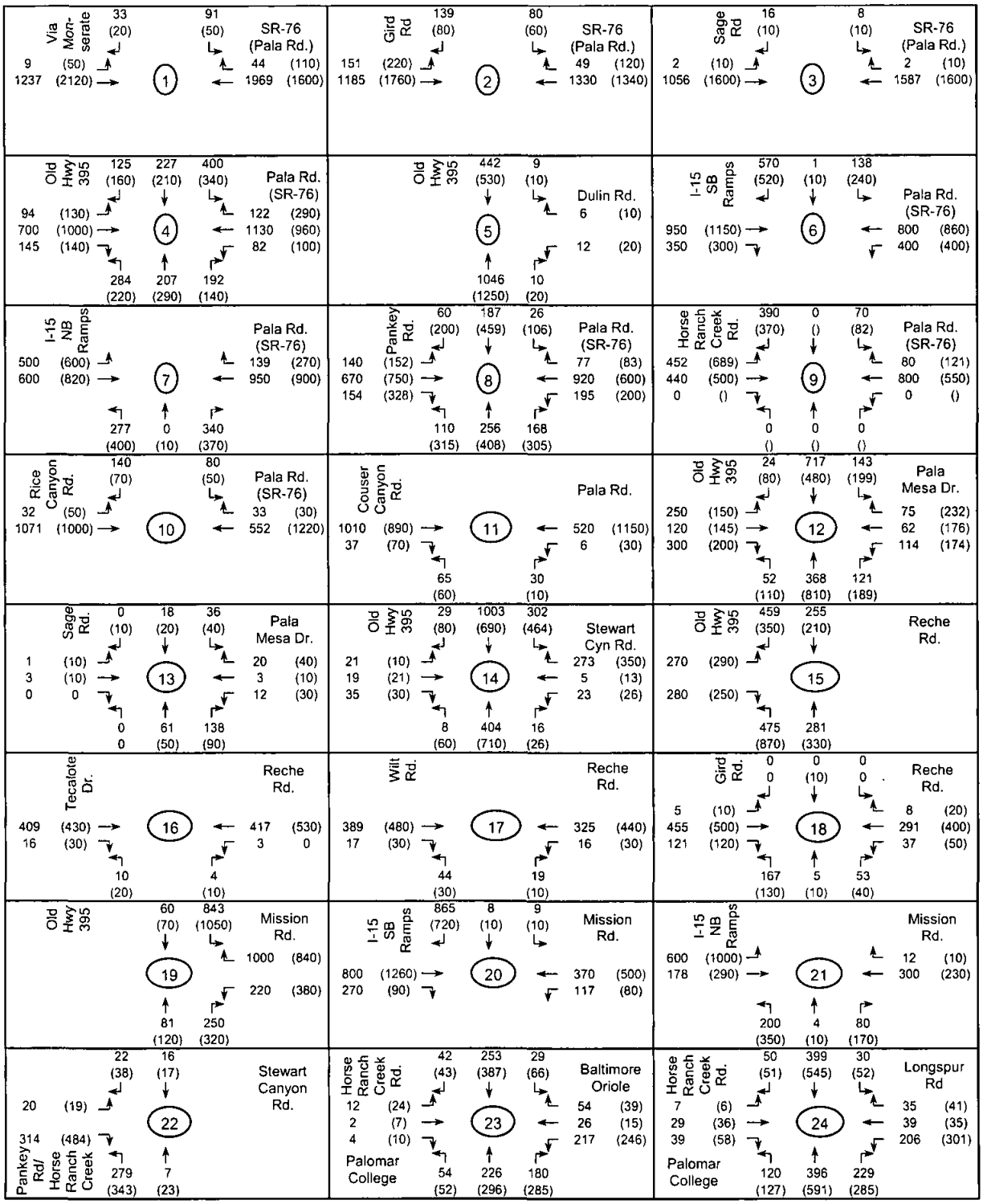


Figure 23c: Existing + Cumulative + Project Volumes

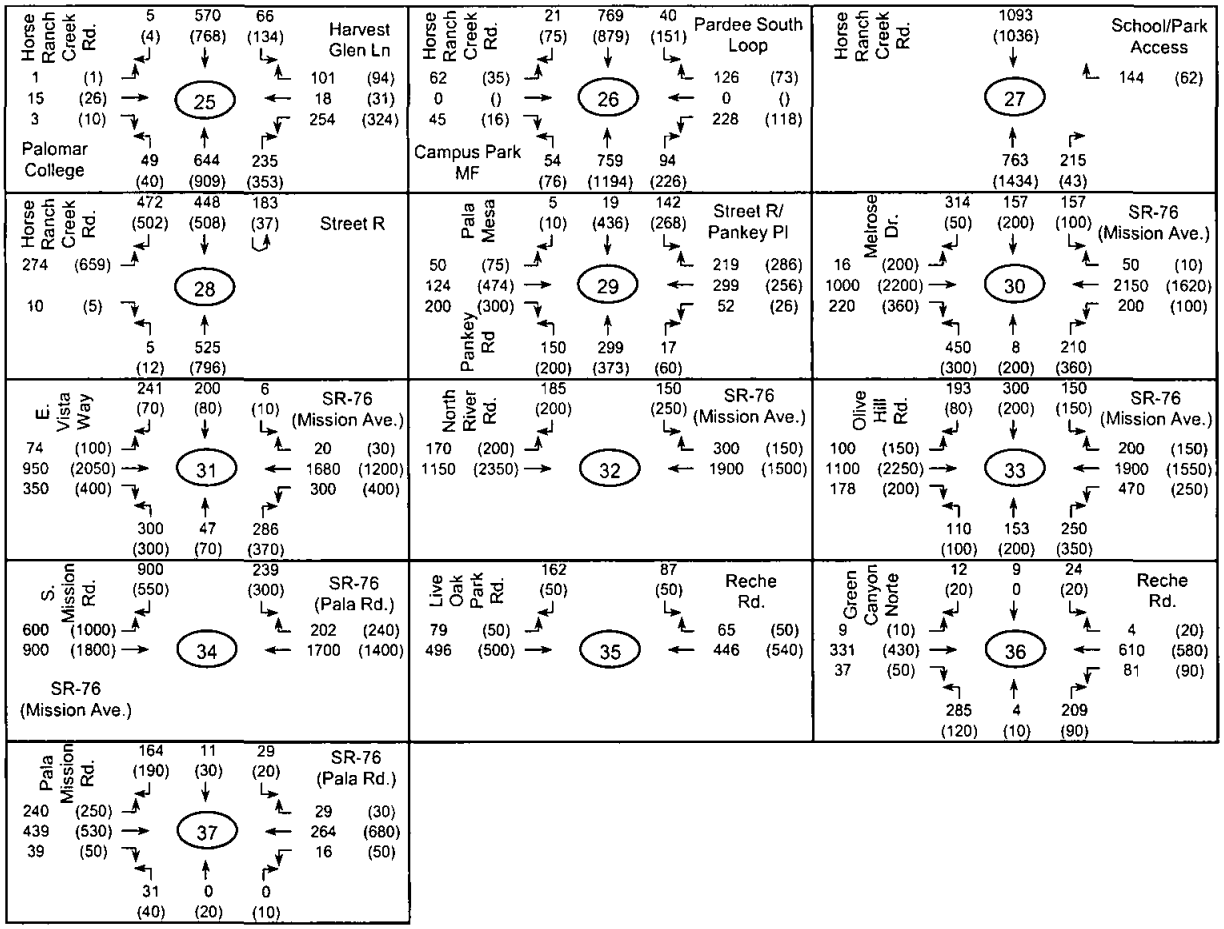


TABLE 23A: EXISTING +CUMULATIVE + PROJECT INTERSECTION LEVEL OF SERVICE (PRIOR TO MITIGATION)

Intersection and (Analysis)[1]	Movement	Peak Hour	Existing		Existing + Cumulative + Project			
			Delay[2]	LOS[3]	Delay[2]	LOS[3]	Delta[4]	Cumulative[5]
1) SR-76 (Pala Rd) at	SB LR	AM	86.1	F	>500	F	>2.0	Yes
Via Monserate (U)	SB LR	PM	91.4	F	>500	F	>2.0	Yes
	All	AM	5.0	A	>500	F	>2.0	Yes
	All	PM	2.9	A	>500	F	>2.0	Yes
2) SR-76 (Pala Rd) at	All	AM	12.9	B	51.5	D	38.6	No
Gird Rd (S)	All	PM	12.6	B	118.0	F	105.4	Yes
3) SR-76 (Pala Rd) at	SB LR	AM	22.6	C	154.9	F	132.3	Yes
Sage Rd (U)	SB LR	PM	33.0	D	>500	F	>2.0	Yes
	All	AM	0.2	A	1.4	A	1.2	No
	All	PM	0.4	A	4.6	A	4.2	No
4) SR-76 (Pala Rd) at	All	AM	29.7	C	268.7	F	239.0	Yes
Old Hwy 395 (S)	All	PM	30.2	C	266.1	F	235.9	Yes
5) Old Hwy 395 at	WB LR	AM	11.2	B	32.9	D	21.7	No
Dulin Rd (U)	WB LR	PM	12.9	B	56.4	F	43.5	Yes
6) SR-76 (Pala Rd) at	All	AM	27.5	C	107.0	F	79.5	Yes
I-15 SB Ramps (S)	All	PM	28.4	C	140.1	F	111.7	Yes
7) SR-76 (Pala Rd) at	All	AM	22.4	C	86.6	F	64.2	Yes
I-15 NB Ramps (S)	All	PM	46.7	D	121.1	F	74.4	Yes
8) SR-76 (Pala Rd) at	NB LTR	AM	12.2	B	>500	F	>2.0	Yes
Pankey Road (U)	NB LTR	PM	14.6	B	>500	F	>2.0	Yes
	SB LTR	AM	0.0	A	>500	F	>2.0	Yes
	SB LTR	PM	0.0	A	>500	F	>2.0	Yes
9) SR-76 (Pala Rd) at	All	AM	DNE	NA	20.9	C	NA	No
Horse Ranch Creek Rd (U)	All	PM	DNE	NA	22.6	C	NA	No
10) SR-76 (Pala Rd) at	SB LR	AM	10.5	B	211.4	F	>2.0	Yes
Rice Canyon Road (U)	SB LR	PM	12.4	B	>500	F	>2.0	Yes
11) SR-76 (Pala Rd) at	NB LR	AM	11.4	B	86.2	F	74.8	Yes
Couser Canyon Road (U)	NB LR	PM	13.5	B	427.4	F	>2.0	Yes
12) Old Highway 395 at	EB LTR	AM	11.0	B	>500	F	>2.0	Yes
Pala Mesa Dr (U)	EB LTR	PM	11.1	B	>500	F	>2.0	Yes
	WB LTR	AM	DNE	NA	>500	F	>2.0	Yes
	WB LTR	PM	DNE	NA	>500	F	>2.0	Yes
13) Pala Mesa Dr at	NB LTR	AM	8.6	A	9.9	A	1.3	No
Sage Road (U)	SB LTR	AM	9.0	A	11.4	B	2.4	No
	NB LTR	PM	8.7	A	10.0	B	1.3	No
	SB LTR	PM	9.1	A	11.4	B	2.3	No
14) Old Highway 395 at	WB LTR	AM	10.8	B	>500	F	>2.0	Yes
Stewart Canyon Road (U)	WB LTR	PM	11.9	B	>500	F	>2.0	Yes
15) Old Highway 395 at	EB LR	AM	18.4	C	>500	F	>2.0	Yes
Reche Road (U)	EB LR	PM	35.9	E	>500	F	>2.0	Yes
	All	PM	10.6	B	>500	F	>2.0	Yes
	All	PM	17.6	B	>500	F	>2.0	Yes
16) Reche Road at	NB LR	AM	13.1	B	15.2	C	2.1	No
Tecalote Dr (U)	NB LR	PM	15.0	C	17.5	C	2.5	No
17) Reche Road at	NB LR	AM	14.8	B	15.6	C	0.8	No
Wilt Road (U)	NB LR	PM	17.2	C	19.8	C	2.6	No
18) Reche Road at	All	AM	14.4	B	15.9	B	1.5	No
Gird Road (S)	All	PM	13.9	B	15.3	B	1.4	No
19) Mission Road at	SB L	AM	12.2	B	54.8	D	42.6	No
Old Highway 395 (S)	SB L	PM	27.3	C	111.8	F	84.5	Yes
20) Mission Road at	SB LTR	AM	20.6	C	75.6	E	55.0	Yes
I-15 SB Ramps (S)	SB LTR	PM	19.3	B	88.2	F	68.9	Yes
21) Mission Road at	All	AM	17.2	B	31.8	C	14.6	No
I-15 NB Ramps (S)	All	PM	37.5	D	109.6	F	72.1	Yes

Continued On Next Page

TABLE 23B: EXISTING +CUMULATIVE + PROJECT INTERSECTION LEVEL OF SERVICE (PRIOR TO MITIGATION)

Intersection and (Analysis)[1]	Movement	Peak Hour	Existing		Existing + Cumulative + Project			
			Delay[2]	LOS[3]	Delay[2]	LOS[3]	Delta[4]	Cumulative[5]
22) Stewart Canyon Rd at	EB LR	AM	8.7	A	11.1	B	2.4	No
HRCR/Pankey Road (U)	EB LR	PM	8.7	A	13.7	B	5.0	No
23) Horse Ranch Crk Rd at	WB LR	AM	DNE	NA	17.8	B	NA	No
Baltimore Oriole (U)	WB LR	PM	DNE	NA	17.7	B	NA	No
24) Horse Ranch Crk Rd at	All-Way	AM	DNE	NA	21.4	C	NA	No
Longspur Rd (U)	All-Way	PM	DNE	NA	24.2	C	NA	No
25) Horse Ranch Crk Rd at	All-Way	AM	DNE	NA	17.7	B	NA	No
Harvest Glen Ln (U)	All-Way	PM	DNE	NA	26.0	C	NA	No
26) Horse Ranch Crk Rd at	WB LR	AM	DNE	NA	18.3	B	NA	No
Pardee South Loop (U)	WB LR	PM	DNE	NA	24.6	C	NA	No
27) Horse Ranch Crk Rd at	WB LR	AM	DNE	NA	15.2	C	NA	No
School/Park Access (U)	WB LR	PM	DNE	NA	18.1	C	NA	No
28) Horse Ranch Crk Rd	All-Way	AM	DNE	NA	11.3	B	NA	No
at Street R (U)	All-Way	PM	DNE	NA	15.1	B	NA	No
29) Pankey/Pala Mesa Dr	WB LR	AM	DNE	NA	24.8	C	NA	No
at Street R (U)	WB LR	PM	DNE	NA	43.3	D	NA	No
30) SR-76 (Mission Ave) at	All	AM	30.3	C	129.5	**F**	99.2	**Yes**
Melrose Drive (S)	All	PM	26.3	C	80.7	**F**	54.4	**Yes**
31) SR-76 (Mission Ave) at	All	AM	60.9	**E**	281.7	**F**	220.8	**Yes**
E. Vista Way (S)	All	PM	48.4	D	261.1	**F**	212.7	**Yes**
32) SR-76 (Mission Ave) at	All	AM	61.7	**E**	317.1	**F**	255.4	**Yes**
North River Rd (S)	All	PM	29.7	C	267.3	**F**	237.6	**Yes**
33) SR-76 (Mission Ave) at	All	AM	53.8	D	239.7	**F**	185.9	**Yes**
Olive Hill Rd (S)	All	PM	52.9	D	184.1	**F**	131.2	**Yes**
34) SR-76 (Mission Ave) at	All	AM	18.9	B	42.1	D	23.2	No
S. Mission Rd (S)	All	PM	21.5	C	88.0	**F**	66.5	**Yes**
35) Reche Rd at	SB LR	AM	23.0	C	45.3	**E**	22.3	**Yes**
Live Oak Park Rd (U)	SB LR	PM	18.0	C	26.3	D	8.3	No
36) Reche Rd at	All	AM	21.1	C	27.3	C	6.2	No
Green Canyon Norte (S)	All	PM	21.0	C	26.0	C	5.0	No
37) SR-76 (Pala Rd.) at	All	AM	29.3	C	35.8	D	6.5	No
Pala Mission Rd. (S)	All	PM	32.4	C	42.6	D	10.2	No

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized 2) Delay - HCM Control Delay in seconds. 3) LOS: Level of Service.
4) Delta is the increase in delay from project. 5) Does the project add cumulatively to an existing cumulative impact (yes or no)?

TABLE 24: EXISTING + CUMULATIVE + PROJECT SEGMENT ADT VOLUMES AND LEVEL OF SERVICE (PRIOR TO MITIGATION)

Segment	Classification (as proposed)	Existing				Cumulative	Project	Existing + Cumulative + Project				
		Daily Volume	LOS E Capacity	V/C	LOS	Daily Volumes	Daily Volumes	Daily Volume	LOS E Capacity	V/C	LOS	Cumulative Impact?
Dulin Road												
Old Highway 395 to Pankey Road	Light Collector	5,770	16,200	0.36	C	1,222	708	7,700	16,200	0.48	D	No
Old Highway 395												
East Mission Road to Reche Road	Collector	5,155	16,200	0.32	C	12,165	2,580	19,900	16,200	1.23	F	Yes
Reche Road to Stewart Canyon Road	Collector	5,646	16,200	0.35	C	14,277	3,377	23,300	16,200	1.44	F	Yes
Stewart Canyon Road to Tecalote Lane	Collector	6,405	16,200	0.40	C	10,481	714	17,600	16,200	1.09	F	Yes
Tecalote Lane to Pala Mesa Drive	Collector	6,603	16,200	0.41	C	11,980	817	19,400	16,200	1.20	F	Yes
Pala Mesa Drive to SR-76 (Pala Road)	Collector	8,302	16,200	0.51	D	11,408	1,190	20,900	16,200	1.29	F	Yes
SR-76 (Pala Road) to Dulin Road	Collector	6,668	16,200	0.41	C	7,733	399	14,800	16,200	0.91	E	Yes
Dulin Road to W. Lilac Road	Rural Collector	4,163	16,200	0.26	C	12,542	495	17,200	16,200	1.06	F	Yes
Reche Road												
Green Canyon Norte to Live Oak Park Road	Rural Collector	10,162	16,200	0.63	D	3,040	598	13,800	16,200	0.85	E	Yes
Live Oak Park Road to Gird Road	Rural Collector	10,380	16,200	0.64	D	1,019	701	12,100	16,200	0.75	E	Yes
Gird Road to Wilt Road	Rural Collector	8,301	16,200	0.51	D	598	701	9,600	16,200	0.59	D	No
Wilt Road to Tecalote Road	Rural Collector	7,814	16,200	0.48	D	385	701	8,900	16,200	0.55	D	No
Tecalote Drive to Old Highway 395	Rural Collector	7,420	16,200	0.46	D	2,382	798	10,600	16,200	0.65	D	No
Stewart Canyon Road												
Old Hwy 395 to Horse Ranch Creek Rd	Light Collector	590	16,200	0.04	A	4,445	2,959	7,994	16,200	0.49	D	No
Pankey Road												
Street R/Pankey Place to SR-76 (Pala Rd)	(Collector)	0	34,200	0.00	A	8,140	483	8,622	34,200	0.25	A	No
SR-76 (Pala Road) to Shearer Crossing	Light Collector	936	16,200	0.06	A	7,376	3,589	11,902	16,200	0.73	E	Yes
Horse Ranch Creek Road												
Stewart Canyon Rd to Baltimore Oriole (#23)	Light Collector	40	16,200	0.00	A	4,158	3,062	7,260	16,200	0.45	D	No
Baltimore Oriole (#23) to Longspur Rd (#24)	(Boulevard 4.2A)	0	27,000	0.00	Un	5,182	5,764	10,945	27,000	0.41	Un	No
Longspur Rd (#24) to Harvest Glen Ln (#25)	(Boulevard 4.2A)	0	27,000	0.00	Un	6,905	8,806	15,711	27,000	0.58	Un	No
Harvest Glen Ln (#25) to Intersection (#26)	(Boulevard 4.2A)	0	27,000	0.00	Un	9,298	11,141	20,439	27,000	0.76	Un	No
Intersection (#26) to Park/School (#27)	(Boulevard 4.2A)	0	27,000	0.00	Un	10,190	10,421	20,611	27,000	0.76	Un	No
Park/Sch (#27) to Street R/Pankey Pl (#28)	(Boulevard 4.2A)	0	27,000	0.00	Un	10,338	10,421	20,759	27,000	0.77	Un	No
Street R/Pankey Pl (#28) to SR-76 (Pala Rd)	(Boulevard 4.2A)	0	27,000	0.00	Un	5,146	7,397	12,544	27,000	0.46	Un	No
Pala Mesa Drive												
Wilt Rd/Sage Rd to Old Highway 395	(Light Collector)	604	16,200	0.04	A	10,086	810	11,500	16,200	0.71	E	Yes
Old Highway 395 to Street R/Pankey Pl	(Light Collector)	0	16,200	0.00	A	3,994	3,017	7,011	16,200	0.43	C	No
Street R/Pankey Place												
Pala Mesa/Pankey to Horse Ranch Creek Rd	(Light Collector)	0	16,200	0.00	A	6,379	3,988	10,367	16,200	0.64	D	No

Notes: (proposed classification). LOS: Level of Service. V/C: Volume to Capacity ratio. Daily volumes is a 24 hour volume. LOS for proposed classification is identified as "Un" as under capacity and "Ov" for over capacity.

TABLE 25A: EXISTING + CUMULATIVE + PROJECT STATE ROUTE VOLUMES AND LEVEL OF SERVICE (AM)

State Route 76 Study Limits	Lanes in each dir	E Vol	AM (Eastbound) Dir	Cap	v/c	LOS	C+P Vol	E+C+P Vol	v/c	LOS	v/c Delta	Cumulative Impact?	E Vol	AM (Westbound) Dir	Cap	v/c	LOS	C+P Vol	E+C+P Vol	v/c	Sig	v/c Delta	Cumulative Impact?
Melrose Dr to E. Vista Way	1	999	EB	1300	0.77	D	369	1368	1.05	F	0.28	Yes	1469	WB	1300	1.13	F	947	2416	1.86	F	0.73	Yes
E. Vista Way to North River Rd	1	718	EB	950	0.76	D	469	1187	1.25	F	0.49	Yes	1040	WB	950	1.09	F	944	1984	2.09	F	0.99	Yes
North River Rd to Olive Hill Rd	1	852	EB	950	0.90	E	539	1391	1.46	F	0.57	Yes	1200	WB	950	1.26	F	1221	2421	2.55	F	1.29	Yes
Olive Hill Rd to S Mission Rd	1	1031	EB	950	1.09	F	467	1498	1.58	F	0.49	Yes	1245	WB	950	1.31	F	1322	2567	2.70	F	1.39	Yes
S Mission Rd to Via Monserate	1	745	EB	950	0.78	D	347	1092	1.15	F	0.37	Yes	901	WB	950	0.95	E	832	1733	1.82	F	0.88	Yes
Via Monserate to Gird Rd	1	808	EB	950	0.85	D	332	1140	1.20	F	0.35	Yes	895	WB	950	0.94	E	901	1796	1.89	F	0.95	Yes
Gird Rd to Sage Rd	1	740	EB	950	0.78	D	391	1131	1.19	F	0.41	Yes	542	WB	950	0.57	C	797	1339	1.41	F	0.84	Yes
Sage Rd to Old Hwy 395	1	760	EB	950	0.80	D	458	1218	1.28	F	0.48	Yes	534	WB	950	0.56	C	827	1361	1.43	F	0.87	Yes
Old Hwy 395 to I-15 SB Ramps	2	1507	EB	2050	0.74	D	93	1600	0.78	D	0.05	No	665	WB	2028	0.33	B	600	1265	0.62	C	0.30	No
I-15 SB Ramps to I-15 NB Ramps	1	844	EB	950	0.89	E	178	1022	1.08	F	0.19	Yes	539	WB	950	0.57	C	455	994	1.05	F	0.48	Yes
I-15 NB Ramps to Pankey Rd	2	559	EB	3100	0.18	A	283	842	0.27	A	0.09	No	606	WB	3030	0.20	A	439	1045	0.34	B	0.14	No
Pankey Rd to Horse Ranch Creek Rd	2	589	EB	1806	0.33	B	15	604	0.33	B	0.01	No	540	WB	2028	0.27	A	644	1184	0.58	C	0.32	No
Horse Ranch Creek Rd to Rice Cyn	1	588	EB	950	0.62	C	16	604	0.64	C	0.02	No	539	WB	950	0.57	C	645	1184	1.25	F	0.68	Yes
Rice Cyn to Couser Cyn	1	589	EB	950	0.62	C	1135	1724	1.81	F	1.19	Yes	540	WB	950	0.57	C	300	840	0.88	E	0.32	Yes
Couser Cyn to Pala Mission Rd	1	634	EB	950	0.67	C	223	857	0.90	E	0.23	Yes	357	WB	950	0.38	B	321	678	0.71	D	0.34	No

Source: SANDAG Year 2030 Cumulative Map. Notes: Dir = Direction. Vol = Volume. Cap = Capacity. v/c = volume to capacity ratio. LOS = Level of Service. E: Existing. C: Cumulative. P: Project.

TABLE 25B: EXISTING + CUMULATIVE + PROJECT STATE ROUTE VOLUMES AND LEVEL OF SERVICE (PM)

State Route 76	Lanes in	E	PM (Eastbound)				C+P	E+C+P			v/c	Cumulative	E	PM (Westbound)				C+P	E+C+P			v/c	Cumulative
Study Limits	each dir	Vol	Dir	Cap	v/c	LOS	Vol	Vol	v/c	LOS	Delta	Impact?	Vol	Dir	Cap	v/c	LOS	Vol	Vol	v/c	Sig	Delta	Impact?
Melrose Dr to E. Vista Way	1	1456	EB	1300	1.12	F	1195	2651	2.04	F	0.92	Yes	1001	WB	1300	0.77	D	726	1727	1.33	F	0.56	Yes
E. Vista Way to North River Rd	1	1107	EB	950	1.17	F	952	2059	2.17	F	1.00	Yes	652	WB	950	0.69	C	767	1419	1.49	F	0.81	Yes
North River Rd to Olive Hill Rd	1	1176	EB	950	1.24	F	1417	2593	2.73	F	1.49	Yes	781	WB	950	0.82	D	830	1611	1.70	F	0.87	Yes
Olive Hill Rd to S Mission Rd	1	1457	EB	950	1.53	F	1119	2576	2.71	F	1.18	Yes	1069	WB	950	1.13	F	782	1851	1.95	F	0.82	Yes
S Mission Rd to Via Monserate	1	1064	EB	950	1.12	F	1209	2273	2.39	F	1.27	Yes	618	WB	950	0.65	C	883	1501	1.58	F	0.93	Yes
Via Monserate to Gird Rd	1	1077	EB	950	1.13	F	1000	2077	2.19	F	1.05	Yes	786	WB	950	0.83	D	575	1361	1.43	F	0.61	Yes
Gird Rd to Sage Rd	1	645	EB	950	0.68	C	755	1400	1.47	F	0.79	Yes	742	WB	950	0.78	D	494	1236	1.30	F	0.52	Yes
Sage Rd to Old Hwy 395	1	638	EB	950	0.67	C	885	1523	1.60	F	0.93	Yes	768	WB	950	0.81	D	680	1448	1.52	F	0.72	Yes
Old Hwy 395 to I-15 SB Ramps	2	816	EB	2050	0.40	B	670	1486	0.72	D	0.33	No	1258	WB	2028	0.62	C	273	1531	0.75	D	0.13	No
I-15 SB Ramps to I-15 NB Ramps	1	718	EB	950	0.76	D	639	1357	1.43	F	0.67	Yes	1153	WB	950	1.21	F	132	1285	1.35	F	0.14	Yes
I-15 NB Ramps to Pankey Rd	2	696	EB	3100	0.22	A	753	1449	0.47	B	0.24	No	820	WB	3030	0.27	A	242	1062	0.35	B	0.08	No
Pankey Rd to Horse Ranch Creek Rd	2	631	EB	1806	0.35	B	649	1280	0.71	C	0.36	No	897	WB	2028	0.44	B	460	1357	0.67	C	0.23	No
Horse Ranch Creek Rd to Rice Cyn	1	631	EB	950	0.66	C	649	1280	1.35	F	0.68	Yes	897	WB	950	0.94	E	460	1357	1.43	F	0.48	Yes
Rice Cyn to Couser Cyn	1	526	EB	950	0.55	C	506	1032	1.09	F	0.53	Yes	930	WB	950	0.98	E	413	1343	1.41	F	0.43	Yes
Couser Cyn to Pala Mission Rd	1	434	EB	950	0.46	B	414	848	0.89	E	0.44	Yes	950	WB	950	1.00	F	301	1251	1.32	F	0.32	Yes

Source: SANDAG Year 2030 Cumulative Map. Notes: Dir = Direction. Vol = Volume. Cap = Capacity. v/c = volume to capacity ratio. LOS = Level of Service. E: Existing. C: Cumulative. P: Project.

TABLE 26: EXISTING + CUMULATIVE + PROJECT FREEWAY VOLUMES AND LEVEL OF SERVICE (PRIOR TO MITIGATION)

Freeway	I-15				I-15				I-15			
Segment	Rainbow Valley Blvd to Mission Rd				Mission Rd to SR-76 (Pala Rd)				SR-76 to Escondido Hwy (Old 395)			
Existing (Year 2006)												
ADT	136,000				127,000				120,000			
Peak Hour	A M		P M		A M		P M		A M		P M	
Direction	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
Number of Lanes	4	4	4	4	4	4	4	4	4	4	4	4
Capacity (1)	9,400	9,400	9,400	9,400	9,400	9,400	9,400	9,400	9,400	9,400	9,400	9,400
K Factor (2)	0.0619	0.0619	0.0738	0.0738	0.0619	0.0619	0.0738	0.0738	0.0590	0.0590	0.0723	0.0723
D Factor (3)	0.1653	0.8347	0.6398	0.3602	0.1653	0.8347	0.6398	0.3602	0.1989	0.8011	0.6955	0.3045
Truck Factor (4)	0.9186	0.9186	0.9186	0.9186	0.9186	0.9186	0.9186	0.9186	0.8977	0.8977	0.8977	0.8977
Peak Hour Volume	1,515	7,650	6,991	3,936	1,415	7,143	6,528	3,675	1,569	6,318	6,722	2,943
Volume to Capacity	0.161	0.814	0.744	0.419	0.150	0.760	0.694	0.391	0.167	0.672	0.715	0.313
LOS	A	D	C	A	A	C	C	A	A	C	C	A
Project Pk Hr Vol	99	68	97	136	14	9	13	19	73	86	128	102
Existing + Project												
Peak Hour Volume	1,614	7,718	7,088	4,072	1,429	7,152	6,541	3,694	1,642	6,404	6,850	3,045
Volume to Capacity	0.172	0.821	0.754	0.433	0.152	0.761	0.696	0.393	0.175	0.681	0.729	0.324
LOS	A	D	C	B	A	C	C	A	A	C	C	A
Increase in V/C	0.011	0.007	0.010	0.014	0.001	0.001	0.001	0.002	0.008	0.009	0.014	0.011
County Impact?	No	No	No	No	No	No	No	No	No	No	No	No
CMP Impact?	No	No	No	No	No	No	No	No	No	No	No	No
Cumulative Pk Hr Vol	311	305	419	464	198	252	343	283	710	956	1340	816
Existing+Cumulative												
Peak Hour Volume	1,826	7,955	7,410	4,400	1,613	7,395	6,871	3,958	2,279	7,274	8,062	3,759
Volume to Capacity	0.194	0.846	0.788	0.468	0.172	0.787	0.731	0.421	0.242	0.774	0.858	0.400
LOS	A	D	C	B	A	C	C	B	A	C	D	A
Existing+Cumulative+Project												
Peak Hour Volume	1,925	8,023	7,507	4,536	1,627	7,404	6,884	3,977	2,352	7,360	8,190	3,861
Volume to Capacity	0.205	0.853	0.799	0.483	0.173	0.788	0.732	0.423	0.250	0.783	0.871	0.411
LOS	A	D	C	B	A	C	C	B	A	C	D	A
Increase in V/C	0.011	0.007	0.010	0.014	0.001	0.001	0.001	0.002	0.008	0.009	0.014	0.011
Cumulative Impact?	No	No	No	No	No	No	No	No	No	No	No	No

Notes: (1) Capacity of 2,350 passenger cars per hour per lane (pcphpl) from Caltrans' Guide for the Preparation of Traffic Impact Studies, Dec 2002. (2) Latest K factor from Caltrans (based on 2005 data), which is the percentage of Annual Average Daily Traffic (AADT) in both directions. (3) Latest D factor from Caltrans (based on 2005 data), which when multiplied by K and ADT will provide peak hour volume. (4) Latest truck factor from Caltrans (based on 2000 data). CMP: Congestion Management Program impact.

3.7 Horizon Year (2030) Conditions

This section describes the horizon year street system (based on the adopted County Circulation Element), horizon year (2030) volumes based on the higher or more conservative volumes between the SANDAG Series 10 (year 2030) and SANDAG Series 11 (year 2030) traffic model, and LOS operations. The SANDAG traffic model included the project, thus the horizon year (2030) volumes have the project traffic removed. Excerpts from the Series 11 2030 volume plot is included in **Appendix P**.

The roadway conditions were based on the County of San Diego adopted Circulation Element. The horizon year segment and intersection configurations are shown in **Figures 24a, 24b, and 24c**.

The horizon year intersection volumes were factored up from existing turn moves based on the increase in ADT for each intersection approach with some volume balancing applied at the freeway interchanges. The peak hour intersection volumes and daily traffic volumes are shown in **Figures 25a, 25b, and 25c**.

The study area is based on the limit of where 50 peak hour project trips will travel. The LOS calculated for the intersections, roadway segments, state route segments, and freeway segments are shown in **Tables 27, 28, 29, and 30**, respectively. The freeway segment analysis included a directional split based on SANDAG Series 11 traffic model. The other Caltrans factors were not adjusted for horizon year conditions. A copy of the SANDAG Series 11 splits for I-15 is included in **Appendix Q**.

Under horizon year (2030) conditions, all study intersections and roadways were calculated to operate at LOS D with the exception of the following:

1) Segment of Pankey Road from SR-76 to Shearer Crossing (LOS F)
2) Freeway segment of I-15 from Rainbow Valley Blvd to Mission Road (LOS E & F AM & LOS F PM)
3) Freeway segment of I-15 from Mission Road to SR-76 (LOS F PM)
4) Freeway segment of I-15 from SR-76 to Escondido Highway Old 395 (LOS E & F PM)

Horizon year (2030) LOS calculations are included in **Appendix R**.

Figure 24a: Horizon Year (2030) Roadway Conditions

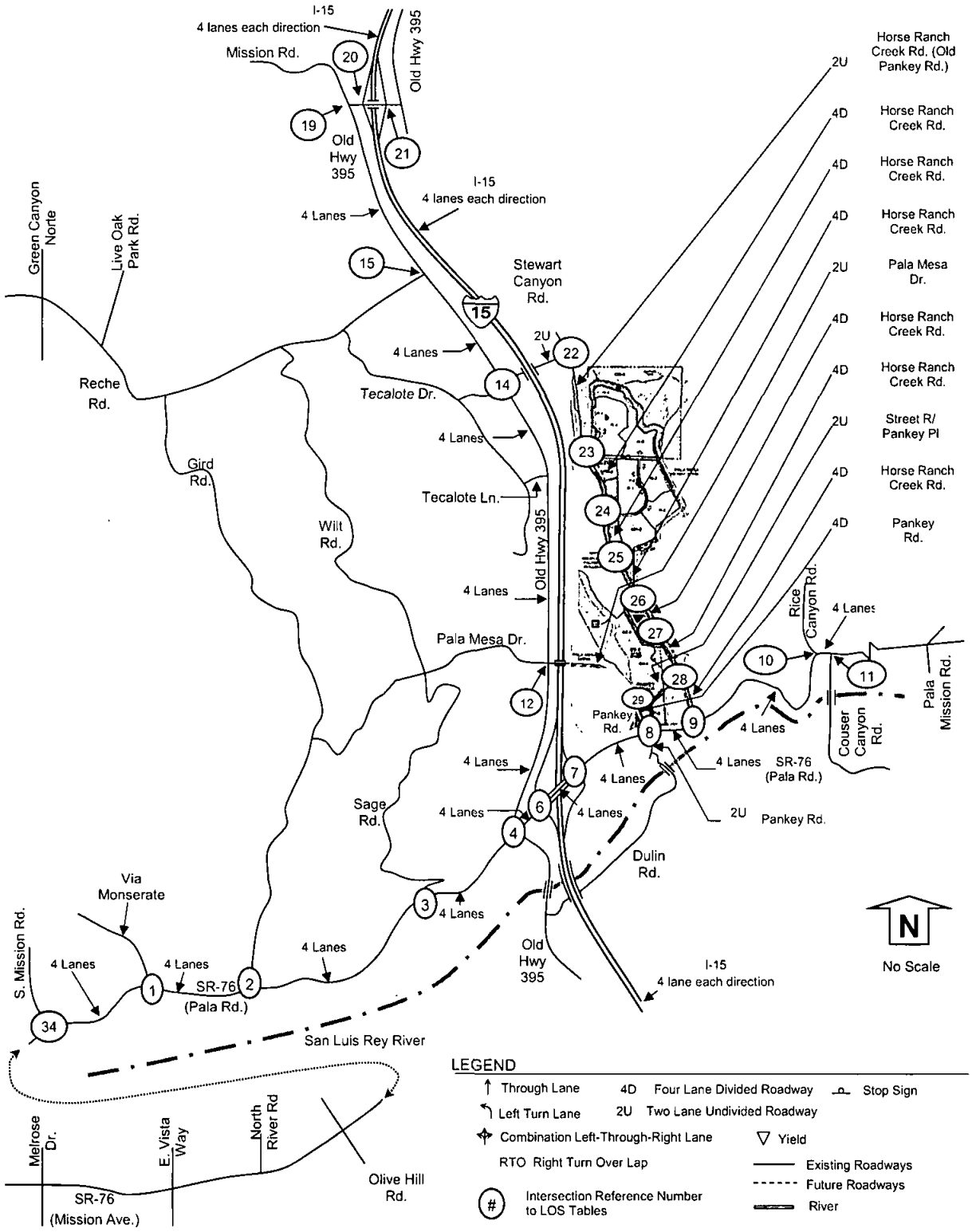


Figure 24b: Horizon Year (2030) Roadway Conditions

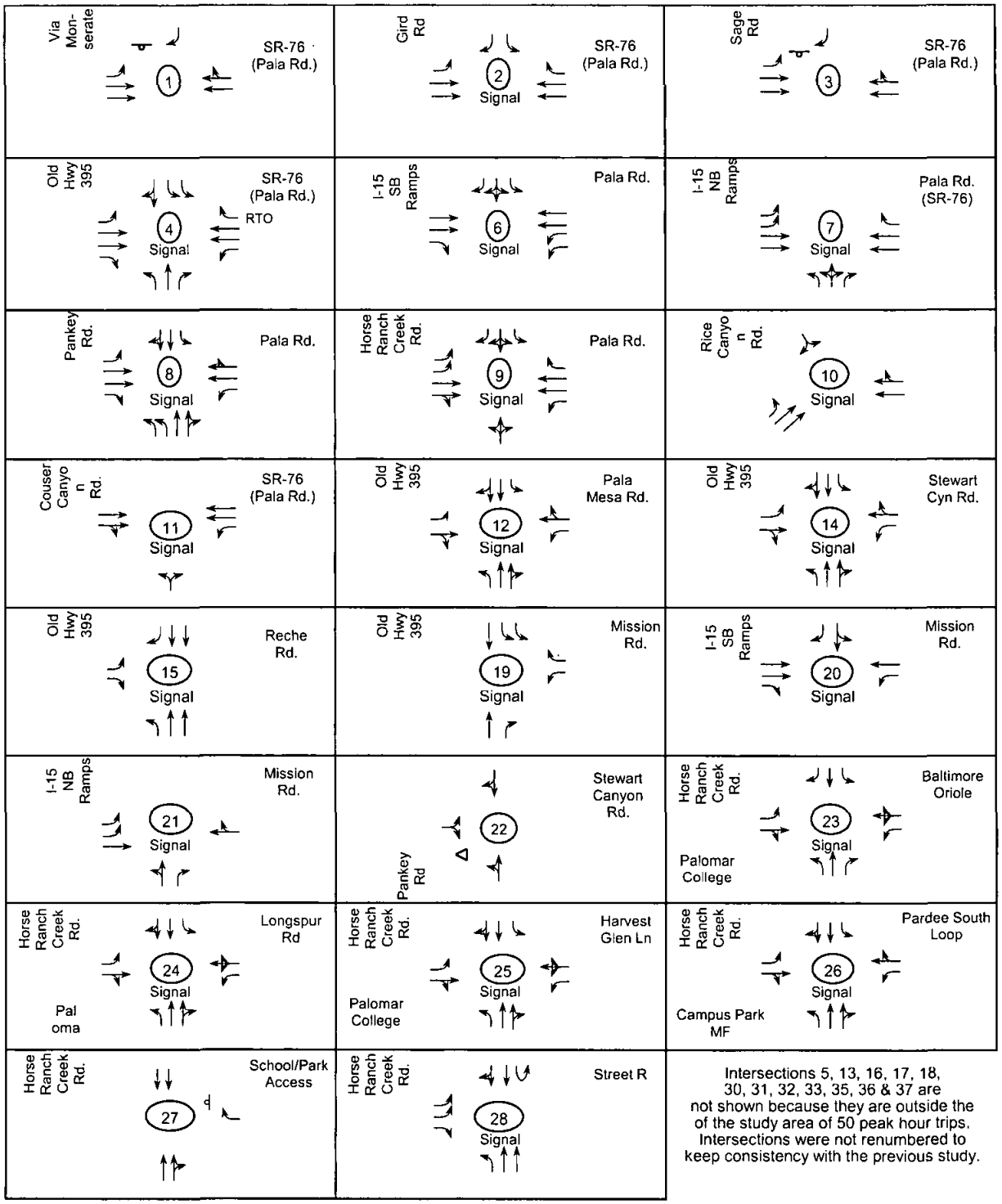
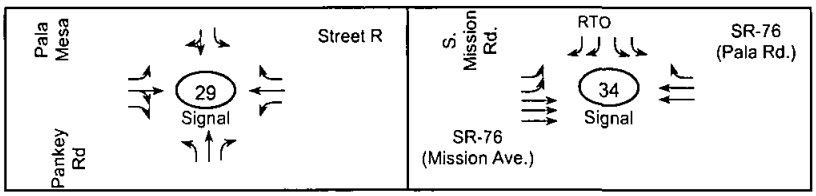


Figure 24c: Horizon Year (2030) Roadway Conditions



Intersections 5, 13, 16, 17, 18, 30, 31, 32, 33, 35, 36 & 37 are not shown because they are outside the of the study area of 50 peak hour trips. Intersections were not renumbered to keep consistency with the previous study.

Figure 25a: Horizon Year (2030) Volumes

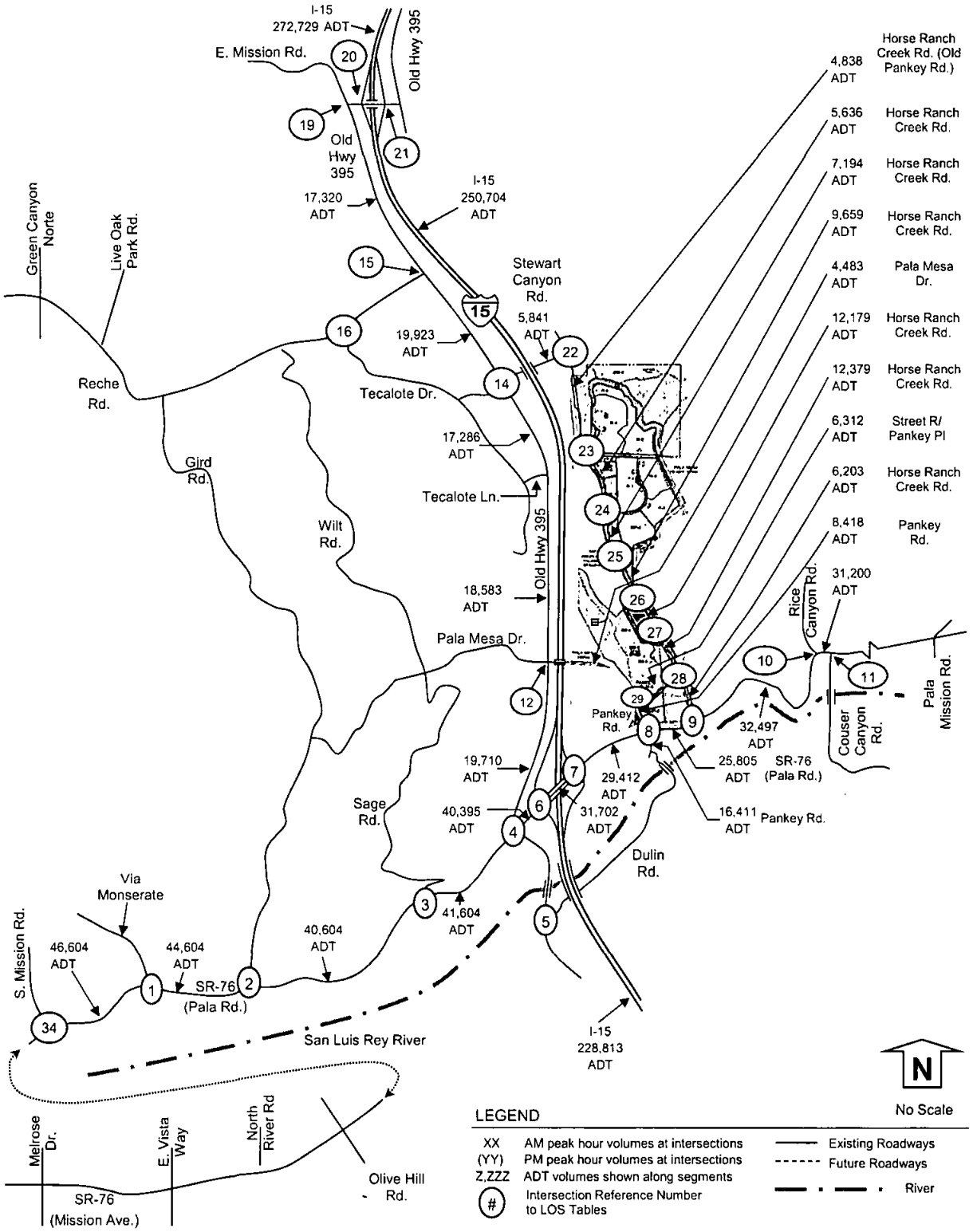
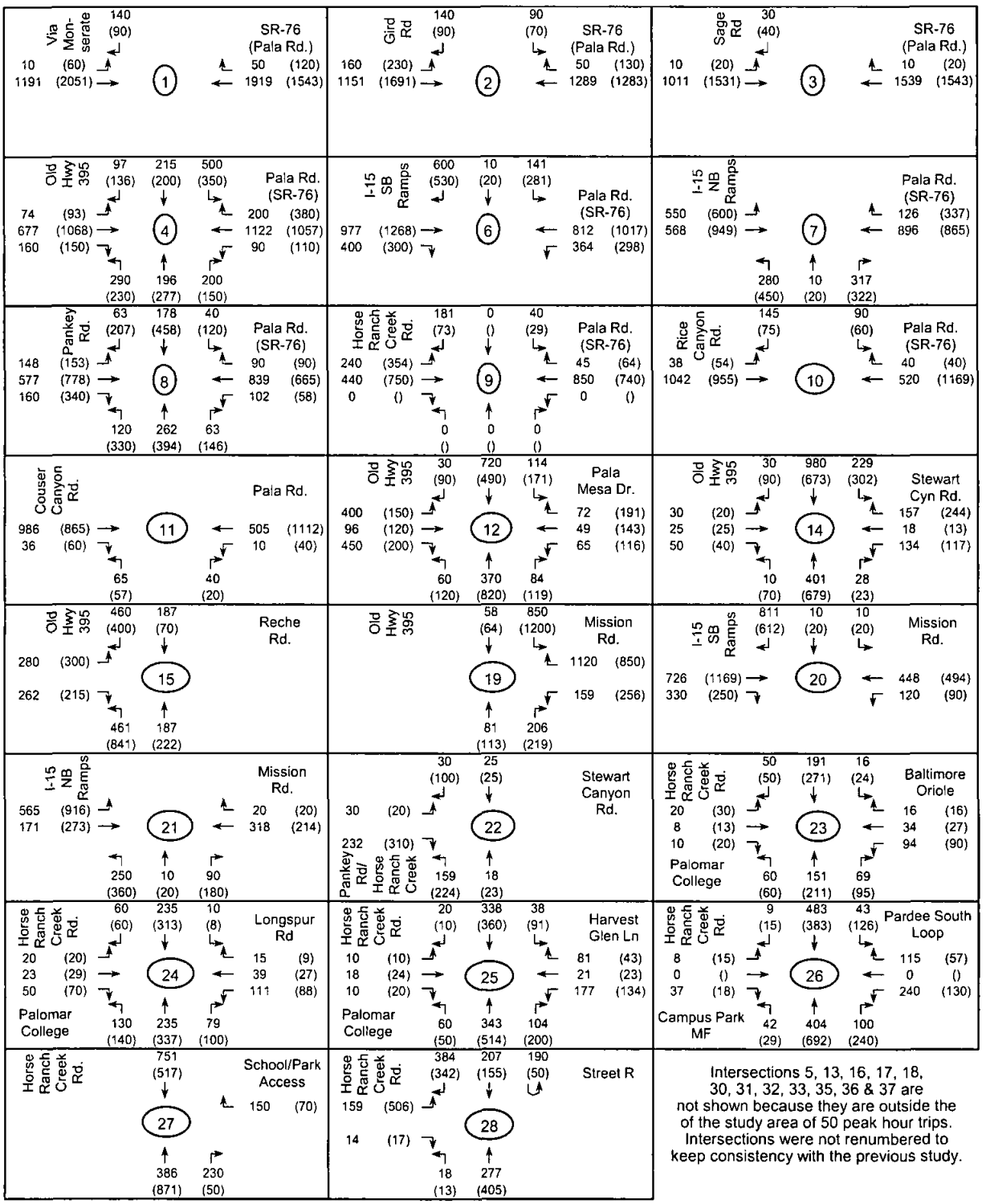
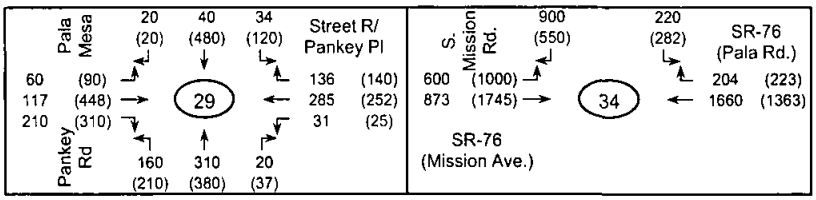


Figure 25b: Horizon Year (2030) Volumes



Intersections 5, 13, 16, 17, 18, 30, 31, 32, 33, 35, 36 & 37 are not shown because they are outside the of the study area of 50 peak hour trips. Intersections were not renumbered to keep consistency with the previous study.

Figure 25c: Horizon Year (2030) Volumes



Intersections 5, 13, 16, 17, 18, 30, 31, 32, 33, 35, 36 & 37 are not shown because they are outside the of the study area of 50 peak hour trips. Intersections were not renumbered to keep consistency with the previous study.

TABLE 27: HORIZON YEAR (2030) INTERSECTION LEVEL OF SERVICE

Intersection and (Analysis)[1]	Movement	Peak Hour	Horizon Year (2030) Delay[2]	LOS[3]
1) SR-76 (Pala Rd) at	SB R	AM	24.3	C
Via Monserate (U)	SB R	PM	19.4	C
2) SR-76 (Pala Rd) at	All	AM	12.3	B
Gird Rd (S)	All	PM	12.6	B
3) SR-76 (Pala Rd) at	SB R	AM	17.5	C
Sage Rd (U)	SB R	PM	17.1	C
4) SR-76 (Pala Rd) at	All	AM	43.4	D
Old Hwy 395 (S)	All	PM	40.6	D
6) SR-76 (Pala Rd) at	All	AM	33.6	C
I-15 SB Ramps (S)	All	PM	32.6	C
7) SR-76 (Pala Rd) at	All	AM	36.8	D
I-15 NB Ramps (S)	All	PM	41.2	D
8) SR-76 (Pala Rd) at	All	AM	23.3	C
Pankey Road (S)	All	PM	34.9	C
9) SR-76 (Pala Rd) at	All	AM	16.9	B
Horse Ranch Creek Rd (S)	All	PM	15.1	B
10) SR-76 (Pala Rd) at	All	AM	8.3	A
Rice Canyon Road (S)	All	PM	8.2	A
11) SR-76 (Pala Rd) at	All	AM	7.4	A
Couser Canyon Road (S)	All	PM	5.5	A
12) Old Highway 395 at	All	AM	28.3	C
Pala Mesa Dr (S)	All	PM	36.5	D
14) Old Highway 395 at	All	AM	20.5	C
Stewart Canyon Road (S)	All	PM	23.0	C
15) Old Highway 395 at	All	AM	22.3	C
Reche Road (S)	All	PM	45.1	D
19) Mission Road at	All	AM	24.2	C
Old Highway 395 (S)	All	PM	28.5	C
20) Mission Road at	All	AM	28.3	C
I-15 SB Ramps (S)	All	PM	18.4	B
21) Mission Road at	All	AM	20.7	C
I-15 NB Ramps (S)	All	PM	26.7	C
22) Stewart Canyon Rd at	EB LR	AM	10.5	B
HRCR/Pankey Road (U)	EB LR	PM	11.5	B
23) Horse Ranch Crk Rd at	All	AM	16.0	B
Baltimore Oriole (S)	All	PM	16.8	B
24) Horse Ranch Crk Rd at	All	AM	22.4	C
Longspur Rd (S)	All	PM	18.9	B
25) Horse Ranch Crk Rd at	All	AM	18.4	B
Harvest Glen Ln (S)	All	PM	18.7	B
26) Horse Ranch Crk Rd at	All	AM	15.5	B
Pardee South Loop (S)	All	PM	16.8	B
27) Horse Ranch Crk Rd at	WB R	AM	12.0	B
School/Park Access (U)	WB R	PM	12.9	B
28) Horse Ranch Crk Rd	All	AM	11.0	B
at Street R (S)	All	PM	10.9	B
29) Pankey/Pala Mesa Dr	All	AM	22.4	C
at Street R (S)	All	PM	38.6	D
34) SR-76 (Mission Ave) at	All	AM	38.8	D
S. Mission Rd (S)	All	PM	34.5	C

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized 2) Delay - HCM Control Delay in seconds. 3) LOS: Level of Service.

TABLE 28: HORIZON YEAR (2030) SEGMENT ADT VOLUMES AND LEVEL OF SERVICE

Segment	Existing Classification (proposed)	Horizon Year (2030) Daily Volume	LOS E Capacity	V/C	LOS
Old Highway 395					
East Mission Road to Reche Road	Collector	17,320	34,200	0.51	B
Reche Road to Stewart Canyon Road	Collector	19,923	34,200	0.58	B
Stewart Canyon Road to Tecalote Lane	Collector	17,286	34,200	0.51	B
Tecalote Lane to Pala Mesa Drive	Collector	18,583	34,200	0.54	B
Pala Mesa Drive to SR-76 (Pala Road)	Collector	19,710	34,200	0.58	B
Stewart Canyon Road					
Old Hwy 395 to Horse Ranch Creek Rd	Light Collector	5,841	16,200	0.36	C
Pankey Road					
Street R/Pankey Place to SR-76 (Pala Rd)	Collector	8,418	34,200	0.25	A
SR-76 (Pala Road) to Shearer Crossing	Light Collector	16,411	16,200	1.01	F
Horse Ranch Creek Road					
Stewart Canyon Rd to Baltimore Oriole (#23)	Light Collector	4,838	16,200	0.30	C
Baltimore Oriole (#23) to Longspur Rd (#24)	(Boulevard 4.2A)	5,636	27,000	0.21	Un
Longspur Rd (#24) to Harvest Glen Ln (#25)	(Boulevard 4.2A)	7,194	27,000	0.27	Un
Harvest Glen Ln (#25) to Intersection (#26)	(Boulevard 4.2A)	9,659	27,000	0.36	Un
Intersection (#26) to Park/School (#27)	(Boulevard 4.2A)	12,179	27,000	0.45	Un
Park/Sch (#27) to Street R/Pankey Pl (#28)	(Boulevard 4.2A)	12,379	27,000	0.46	Un
Street R/Pankey Pl (#28) to SR-76 (Pala Rd)	(Boulevard 4.2A)	6,203	27,000	0.23	Un
Pala Mesa Drive					
Old Highway 395 to Street R/Pankey Pl	Light Collector	4,483	16,200	0.28	C
Street R/Pankey Place					
Pala Mesa/Pankey to Horse Ranch Creek Rd	Light Collector	6,312	16,200	0.39	C

Notes: (proposed GP Update classification). LOS: Level of Service. V/C: Volume to Capacity ratio. Daily volumes is a 24 hour volume. Horse Ranch Creek Road LOS for proposed classification per GP Update is noted as "Un" as under capacity and "Ov" for over capacity.

TABLE 29: HORIZON YEAR (2030) STATE ROUTE ADT VOLUMES AND LEVEL OF SERVICE

State Route 76	Lanes in	2030	AM (Eastbound)				2030	AM (Westbound)				2030	PM (Eastbound)				2030	PM (Westbound)			
Study Limits	each dir	Vol	Dir	Cap	v/c	LOS	Vol	Dir	Cap	v/c	LOS	Vol	Dir	Cap	v/c	LOS	Vol	Dir	Cap	v/c	LOS
S Mission Rd to Via Monserate	2	1045	EB	3164	0.33	B	1794	WB	3300	0.54	C	2200	EB	3300	0.67	C	1437	WB	2122	0.68	C
Via Monserate to Gird Rd	2	1091	EB	3300	0.33	B	1765	WB	3162	0.56	C	1998	EB	2912	0.69	C	1294	WB	3300	0.39	B
Gird Rd to Sage Rd	2	1082	EB	3300	0.33	B	1610	WB	2912	0.55	C	1599	EB	3300	0.48	B	1169	WB	2912	0.40	B
Sage Rd to Old Hwy 395	2	1169	EB	1904	0.61	C	1600	WB	3300	0.48	B	1596	EB	1904	0.84	D	1381	WB	3300	0.42	B
Old Hwy 395 to I-15 SB Ramps	2	1319	EB	3030	0.44	B	1247	WB	2028	0.61	C	1454	EB	3030	0.48	B	1498	WB	2028	0.74	D
I-15 SB Ramps to I-15 NB Ramps	2	939	EB	3030	0.31	A	837	WB	3030	0.28	A	1222	EB	3030	0.40	B	1086	WB	3030	0.36	B
I-15 NB Ramps to Pankey Rd	2	641	EB	3100	0.21	A	817	WB	3030	0.27	A	1106	EB	3100	0.36	B	780	WB	3030	0.26	A
Pankey Rd to Horse Ranch Creek Rd	2	542	EB	1806	0.30	A	965	WB	1956	0.49	B	934	EB	1806	0.52	C	1050	WB	2028	0.52	C
Horse Ranch Creek Rd to Rice Cyn	2	722	EB	1806	0.40	B	1139	WB	1956	0.58	C	1219	EB	1806	0.67	C	1291	WB	2028	0.64	C
Rice Cyn to Couser Cyn	2	802	EB	3100	0.26	A	1684	WB	2382	0.71	C	977	EB	3100	0.32	B	1282	WB	2382	0.54	C

Source: SANDAG, higher volumes used btw Series 10 (2030) Cumulative Map and Series 11 (2030) coverage. Notes: Dir = Direction. Vol = Volume. Cap = Capacity. v/c = volume to capacity ratio. LOS = Level of Service.

TABLE 30: HORIZON YEAR (2030) FREEWAY VOLUMES AND LEVEL OF SERVICE

Freeway Segment	I-15 Rainbow Valley Blvd to Mission Rd				I-15 Mission Rd to SR-76 (Pala Rd)				I-15 SR-76 to Escondido Hwy (Old 395)			
SANDAG (Horizon Year)												
ADT	275,000				251,000				231,000			
Peak Hour	A M		P M		A M		P M		A M		P M	
Direction	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
Number of Lanes	4	4	4	4	4	4	4	4	4	4	4	4
Capacity (1)	9,400	9,400	9,400	9,400	9,400	9,400	9,400	9,400	9,400	9,400	9,400	9,400
K Factor (2)	0.0619	0.0619	0.0738	0.0738	0.0619	0.0619	0.0738	0.0738	0.0590	0.0590	0.0723	0.0723
D Factor (3)	0.5064	0.4936	0.5064	0.4936	0.5075	0.4925	0.5075	0.4925	0.4917	0.5083	0.4917	0.5083
Truck Factor (4)	0.9186	0.9186	0.9186	0.9186	0.9186	0.9186	0.9186	0.9186	0.8977	0.8977	0.8977	0.8977
Peak Hour Volume	9,384	9,147	11,188	10,905	8,584	8,330	10,234	9,931	7,465	7,717	9,148	9,457
Volume to Capacity	1.00	0.97	1.19	1.16	0.91	0.89	1.09	1.06	0.79	0.82	0.97	1.01
LOS	F	E	F	F	D	D	F	F	C	D	E	F

Notes: (1) Capacity of 2,350 passenger cars per hour per lane from Caltrans' Guide for the Preparation of Traffic Impact Studies, Dec 2002. (2) Latest K factor from Caltrans (based on 2005 data), which is the percentage of Annual Average Daily Traffic (AADT) in both directions. (3) D factor from SANDAG Series 11 split for year 2030, which when multiplied by K and ADT will provide peak hour volume. (4) Latest truck factor from Caltrans (based on 2000 data).

3.8 Horizon Year (2030) + Project Conditions

This section describes the horizon year (2030) + project conditions for AM, PM, and daily traffic conditions. Because the project TAZ has the traffic coded in the traffic model, the horizon year (2030) roadway volumes already have the project volumes embedded. The long-term project assignment is used in this scenario. The peak hour intersection volumes and daily traffic volumes are shown in **Figures 26a, 26b, and 26c**.

The LOS calculated for the intersections, roadway segments, state route segments, and freeway segments are shown in **Tables 31, 32, 33a, 33b, and 34**, respectively. Horizon year (2030) + project LOS calculations are included in **Appendix S**.

Under horizon year (2030) + project conditions, all study intersections and roadways were calculated to operate at LOS D with the exception of the following:

1) Segment of Pankey Road from SR-76 to Shearer Crossing (LOS F)
2) Freeway segment of I-15 from Rainbow Valley Blvd to Mission Road (LOS E & F AM & LOS F PM)
3) Freeway segment of I-15 from Mission Road to SR-76 (LOS F PM)
4) Freeway segment of I-15 from SR-76 to Escondido Highway (LOS E & F PM)

Of the aforementioned locations, the project is calculated to have a cumulative impact to the segment of Pankey Road from SR-76 to Shearer Crossing (LOS F).

Figure 26a: Horizon Year (2030) + Project Volumes

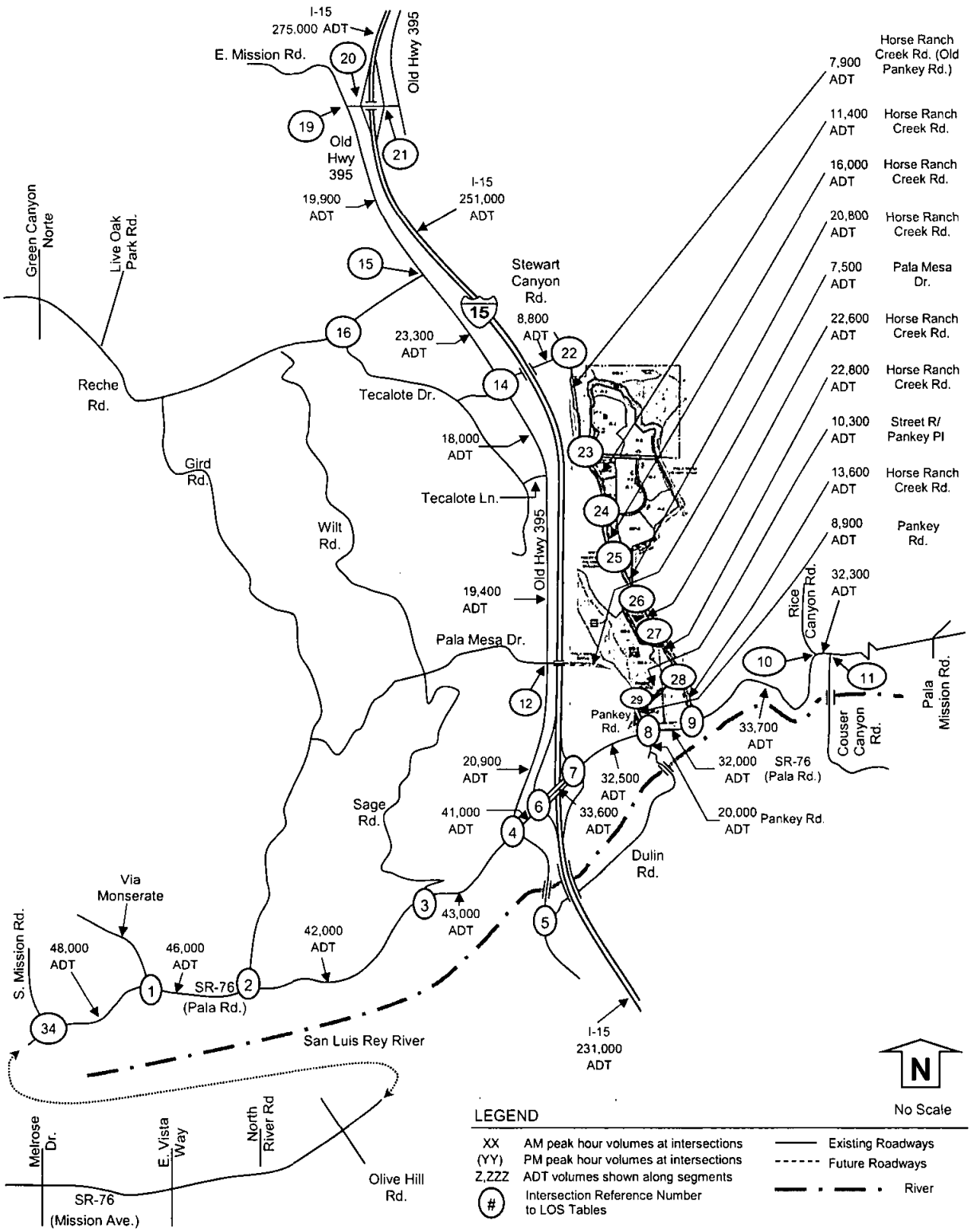
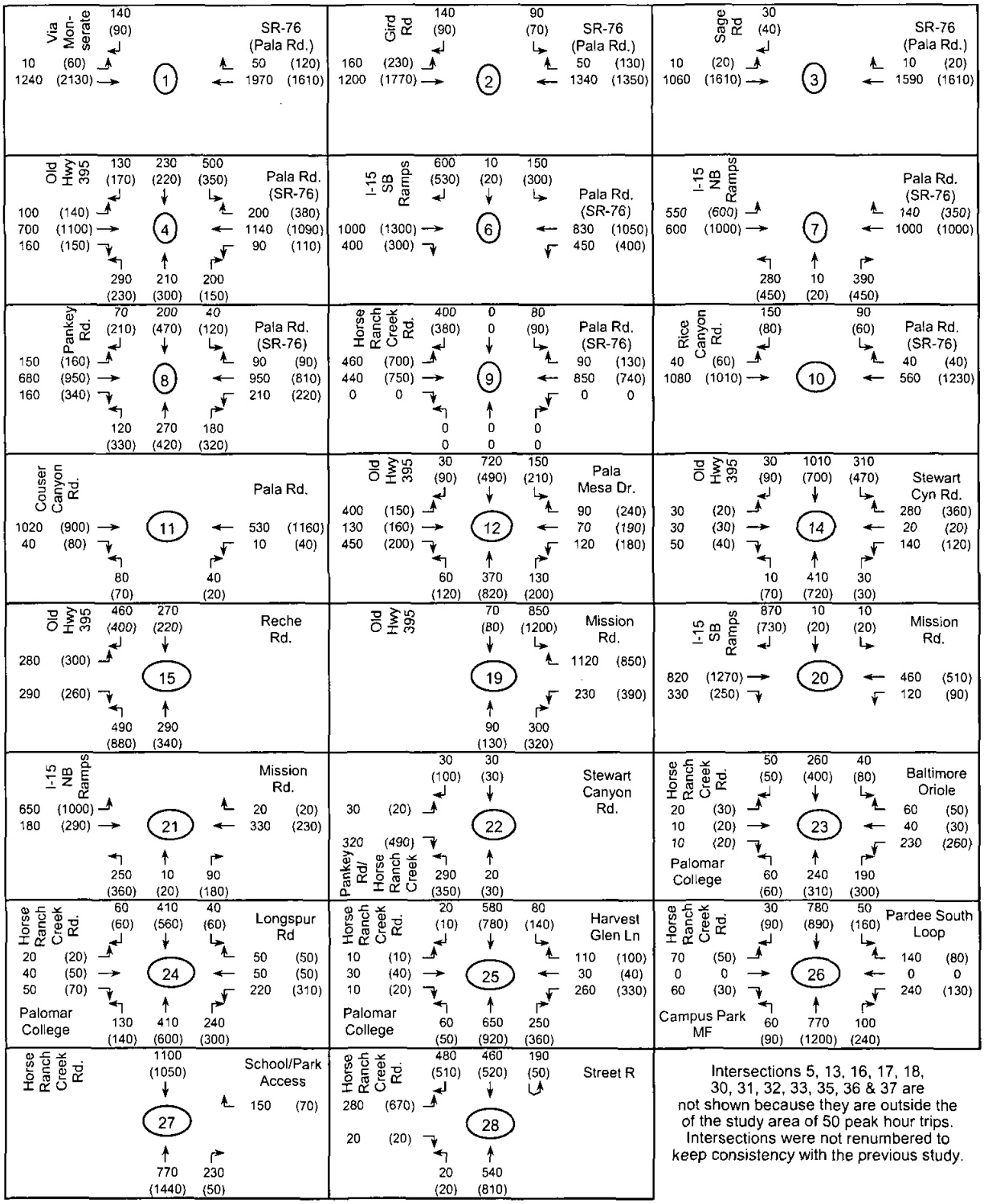
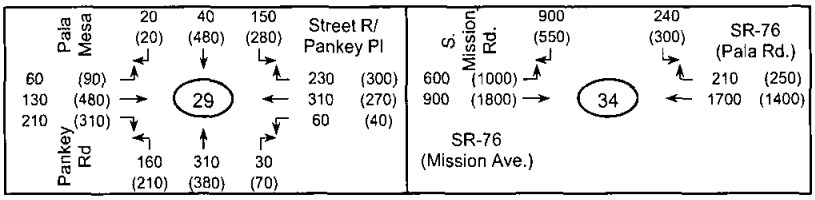


Figure 26b: Horizon Year (2030) + Project Volumes



Intersections 5, 13, 16, 17, 18, 30, 31, 32, 33, 35, 36 & 37 are not shown because they are outside the of the study area of 50 peak hour trips. Intersections were not renumbered to keep consistency with the previous study.

Figure 26c: Horizon Year (2030) + Project Volumes



Intersections 5, 13, 16, 17, 18, 30, 31, 32, 33, 35, 36 & 37 are not shown because they are outside the of the study area of 50 peak hour trips. Intersections were not renumbered to keep consistency with the previous study.

TABLE 31: HORIZON YEAR (2030) + PROJECT INTERSECTION LEVEL OF SERVICE

Intersection & (Analysis)[1]	Move-ment	Peak Hour	Horizon Year (2030) Delay[2]	LOS[3]	Horizon Year (2030) + Project Delay[2]	LOS[3]	Delta[4]	CM Vol[5]	County Sig[6]	CMP Sig[7]
1) SR-76 (Pala Rd) at	SB R	AM	24.3	C	25.3	C	1.0	0	No	No
Via Monserate (U)	SB R	PM	19.4	C	19.7	C	0.3	0	No	No
2) SR-76 (Pala Rd) at	All	AM	12.3	B	12.5	B	0.2	NA	No	No
Gird Rd (S)	All	PM	12.6	B	13.0	B	0.4	NA	No	No
3) SR-76 (Pala Rd) at	SB R	AM	17.5	C	17.6	C	0.1	0	No	No
Sage Rd (U)	SB R	PM	17.1	C	17.9	C	0.8	0	No	No
4) SR-76 (Pala Rd) at	All	AM	43.4	D	51.0	D	7.6	NA	No	No
Old Hwy 395 (S)	All	PM	40.6	D	47.8	D	7.2	NA	No	No
6) SR-76 (Pala Rd) at	All	AM	33.6	C	34.0	C	0.4	NA	No	No
I-15 SB Ramps (S)	All	PM	32.6	C	34.1	C	1.5	NA	No	No
7) SR-76 (Pala Rd) at	All	AM	36.8	D	41.2	D	4.4	NA	No	No
I-15 NB Ramps (S)	All	PM	41.2	D	41.3	D	0.1	NA	No	No
8) SR-76 (Pala Rd) at	All	AM	23.3	C	27.8	C	4.5	NA	No	No
Pankey Road (S)	All	PM	34.9	C	45.4	D	10.5	NA	No	No
9) SR-76 (Pala Rd) at	All	AM	16.9	B	21.8	C	4.9	NA	No	No
Horse Ranch Creek Rd (S)	All	PM	15.1	B	22.9	C	7.8	NA	No	No
10) SR-76 (Pala Rd) at	All	AM	8.3	A	8.5	A	0.2	NA	No	No
Rice Canyon Road (S)	All	PM	8.2	A	8.6	A	0.4	NA	No	No
11) SR-76 (Pala Rd) at	All	AM	7.4	A	7.7	A	0.3	NA	No	No
Couser Canyon Road (S)	All	PM	5.5	A	5.7	A	0.2	NA	No	No
12) Old Highway 395 at	All	AM	28.3	C	34.2	C	5.9	NA	No	No
Pala Mesa Dr (S)	All	PM	36.5	D	52.3	D	15.8	NA	No	No
14) Old Highway 395 at	All	AM	20.5	C	22.6	C	2.1	NA	No	No
Stewart Canyon Road (S)	All	PM	23.0	C	39.9	D	16.9	NA	No	No
15) Old Highway 395 at	All	AM	22.3	C	23.3	C	1.0	NA	No	No
Reche Road (S)	All	PM	45.1	D	50.9	D	5.8	NA	No	No
19) Mission Road at	All	AM	24.2	C	27.5	C	3.3	NA	No	No
Old Highway 395 (S)	All	PM	28.5	C	37.8	D	9.3	NA	No	No
20) Mission Road at	All	AM	28.3	C	36.8	D	8.5	NA	No	No
I-15 SB Ramps (S)	All	PM	18.4	B	27.7	C	9.3	NA	No	No
21) Mission Road at	All	AM	20.7	C	22.8	C	2.1	NA	No	No
I-15 NB Ramps (S)	All	PM	26.7	C	29.9	C	3.2	NA	No	No
22) Stewart Canyon Rd at	EB LR	AM	10.5	B	12.2	B	1.7	88	No	No
HRCR/Pankey Road (U)	EB LR	PM	11.5	B	15.5	C	4.0	180	No	No
23) Horse Ranch Crk Rd at	All	AM	16.0	B	17.5	B	1.5	NA	No	No
Baltimore Oriole (S)	All	PM	16.8	B	19.6	B	2.8	NA	No	No
24) Horse Ranch Crk Rd at	All	AM	22.4	C	23.6	C	1.2	NA	No	No
Longspur Rd (S)	All	PM	18.9	B	24.9	C	6.0	NA	No	No
25) Horse Ranch Crk Rd at	All	AM	18.4	B	22.2	C	3.8	NA	No	No
Harvest Glen Ln (S)	All	PM	18.7	B	30.2	C	11.5	NA	No	No
26) Horse Ranch Crk Rd at	All	AM	15.5	B	18.9	B	3.4	NA	No	No
Pardee South Loop (S)	All	PM	16.8	B	27.3	C	10.5	NA	No	No
27) Horse Ranch Crk Rd at	WB R	AM	12.0	B	15.6	C	3.6	0	No	No
School/Park Access (U)	WB R	PM	12.9	B	18.7	C	5.8	0	No	No
28) Horse Ranch Crk Rd	All	AM	11.0	B	11.8	B	0.8	NA	No	No
at Street R (S)	All	PM	10.9	B	15.7	B	4.8	NA	No	No
29) Pankey/Pala Mesa Dr	All	AM	22.4	C	27.0	C	4.6	NA	No	No
at Street R (S)	All	PM	38.6	D	48.0	D	9.4	NA	No	No
34) SR-76 (Mission Ave) at	All	AM	38.8	D	41.2	D	2.4	NA	No	No
S. Mission Rd (S)	All	PM	34.5	C	36.2	D	1.7	NA	No	No

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized 2) Delay - HCM Control Delay in seconds. 3) LOS: Level of Service. 4) Delta is the increase in delay from project. 5) CM Vol: Critical Movement Volume used to show project volumes on the critical movement. 6) County Sig: is the project have a calculated impact based on the critical volume (Yes or No). 7) CMP Sig: Congention Mangement Program significant impact based on CMP criteria (Yes or No). DNE: Does Not Exist. NA: Not Applicable.

TABLE 32: HORIZON YEAR (2030) + PROJECT SEGMENT ADT VOLUMES AND LEVEL OF SERVICE

Segment	Sept 2005 Circulation Element	Horizon Year (2030) Daily Volume	LOS E Capacity	V/C	LOS	Project Daily Volumes	Horizon Year (2030) + Project Daily Volume	LOS E Capacity	V/C	LOS	Change In V/C	Cumulative Impact?
Old Highway 395												
East Mission Road to Reche Road	Collector	17,320	34,200	0.51	B	2,580	19,900	34,200	0.58	B	0.08	No
Reche Road to Stewart Canyon Road	Collector	19,923	34,200	0.58	B	3,377	23,300	34,200	0.68	C	0.10	No
Stewart Canyon Road to Tecalote Lane	Collector	17,286	34,200	0.51	B	714	18,000	34,200	0.53	B	0.02	No
Tecalote Lane to Pala Mesa Drive	Collector	18,583	34,200	0.54	B	817	19,400	34,200	0.57	B	0.02	No
Pala Mesa Drive to SR-76 (Pala Road)	Collector	19,710	34,200	0.58	B	1,190	20,900	34,200	0.61	B	0.03	No
Stewart Canyon Road												
Old Hwy 395 to Horse Ranch Creek Rd	Light Collector	5,841	16,200	0.36	C	2,959	8,800	16,200	0.54	D	0.18	No
Pankey Road												
Street R/Pankey Place to SR-76 (Pala Rd)	Collector	8,418	34,200	0.25	A	483	8,900	34,200	0.26	A	0.01	No
SR-76 (Pala Road) to Shearer Crossing	Light Collector	16,411	16,200	1.01	F	3,589	20,000	16,200	1.23	F	0.22	Yes
Horse Ranch Creek Road												
Stewart Canyon Rd to Baltimore Oriole (#23)	Light Collector	4,838	16,200	0.30	C	3,062	7,900	16,200	0.49	D	0.19	No
Baltimore Oriole (#23) to Longspur Rd (#24)	(Boulevard 4.2A)	5,636	27,000	0.21	Un	5,764	11,400	27,000	0.42	Un	0.21	No
Longspur Rd (#24) to Harvest Glen Ln (#25)	(Boulevard 4.2A)	7,194	27,000	0.27	Un	8,806	16,000	27,000	0.59	Un	0.33	No
Harvest Glen Ln (#25) to Intersection (#26)	(Boulevard 4.2A)	9,659	27,000	0.36	Un	11,141	20,800	27,000	0.77	Un	0.41	No
Intersection (#26) to Park/School (#27)	(Boulevard 4.2A)	12,179	27,000	0.45	Un	10,421	22,600	27,000	0.84	Un	0.39	No
Park/Sch (#27) to Street R/Pankey Pl (#28)	(Boulevard 4.2A)	12,379	27,000	0.46	Un	10,421	22,800	27,000	0.84	Un	0.39	No
Street R/Pankey Pl (#28) to SR-76 (Pala Rd)	(Boulevard 4.2A)	6,203	27,000	0.23	Un	7,397	13,600	27,000	0.50	Un	0.27	No
Pala Mesa Drive												
Old Highway 395 to Street R/Pankey Pl	Light Collector	4,483	16,200	0.28	C	3,017	7,500	16,200	0.46	D	0.19	No
Street R/Pankey Place												
Pala Mesa/Pankey to Horse Ranch Creek Rd	Light Collector	6,312	16,200	0.39	C	3,988	10,300	16,200	0.64	D	0.25	No

Notes: (proposed GP Update classification). LOS: Level of Service. V/C: Volume to Capacity ratio. Daily volumes is a 24 hour volume.
Horse Ranch Creek Road LOS for proposed classification per GP Update is noted as "Un" as under capacity and "Ov" for over capacity.

TABLE 33A: HORIZON YEAR (2030) + PROJECT STATE ROUTE ADT VOLUMES AND LEVEL OF SERVICE (AM)

State Route 76 Study Limits	Lanes in each dir	2030 Vol	AM (Eastbound) Dir	Cap	v/c	LOS	P Vol	2030+P Vol	v/c	LOS	v/c Delta	Impact?	2030 Vol	AM (Westbound) Dir	Cap	v/c	LOS	P Vol	2030+P Vol	v/c	LOS	v/c Delta	Impact?
S Mission Rd to Via Monserate	2	1045	EB	3164	0.33	B	47	1092	0.35	B	0.01	No	1794	WB	3300	0.54	C	46	1840	0.56	C	0.01	No
Via Monserate to Gird Rd	2	1091	EB	3300	0.33	B	49	1140	0.35	B	0.01	No	1765	WB	3162	0.56	C	51	1816	0.57	C	0.02	No
Gird Rd to Sage Rd	2	1082	EB	3300	0.33	B	49	1131	0.34	B	0.01	No	1610	WB	3300	0.49	B	51	1661	0.50	B	0.02	No
Sage Rd to Old Hwy 395	2	1169	EB	1904	0.61	C	49	1218	0.64	C	0.03	No	1600	WB	3300	0.48	B	51	1651	0.50	B	0.02	No
Old Hwy 395 to I-15 SB Ramps	2	1319	EB	3030	0.44	B	24	1343	0.44	B	0.01	No	1247	WB	2028	0.61	C	18	1265	0.62	C	0.01	No
I-15 SB Ramps to I-15 NB Ramps	2	939	EB	3030	0.31	A	83	1022	0.34	B	0.03	No	837	WB	3030	0.28	A	157	994	0.33	B	0.05	No
I-15 NB Ramps to Pankey Rd	2	641	EB	3100	0.21	A	201	842	0.27	A	0.06	No	817	WB	3030	0.27	A	228	1045	0.34	B	0.08	No
Pankey Rd to Horse Ranch Creek Rd	2	542	EB	1806	0.30	A	220	762	0.42	B	0.12	No	965	WB	1956	0.49	B	219	1184	0.61	C	0.11	No
Horse Ranch Creek Rd to Rice Cyn	2	722	EB	1806	0.40	B	40	762	0.42	B	0.02	No	1139	WB	1956	0.58	C	45	1184	0.61	C	0.02	No
Rice Cyn to Couser Cyn	2	802	EB	2382	0.34	B	38	840	0.35	B	0.02	No	1684	WB	3100	0.54	C	40	1724	0.56	C	0.01	No

Source: SANDAG, higher volumes used btw Series 10 (2030) Cumulative Map and Series 11 (2030) coverage. Notes: Dir = Direction. Vol = Volume. Cap = Capacity.
v/c = volume to capacity ratio. LOS = Level of Service. P: Project.

TABLE 33B: HORIZON YEAR (2030) + PROJECT STATE ROUTE ADT VOLUMES AND LEVEL OF SERVICE (PM)

State Route 76 Study Limits	Lanes in each dir	2030 Vol	PM (Eastbound) Dir	Cap	v/c	LOS	P Vol	2030+P Vol	v/c	LOS	v/c Delta	Impact?	2030 Vol	PM (Westbound) Dir	Cap	v/c	LOS	P Vol	2030+P Vol	v/c	LOS	v/c Delta	Impact?
S Mission Rd to Via Monserate	2	2200	EB	3300	0.67	C	73	2273	0.69	C	0.02	No	1437	WB	2122	0.68	C	64	1501	0.71	C	0.03	No
Via Monserate to Gird Rd	2	1998	EB	2912	0.69	C	79	2077	0.71	D	0.03	No	1294	WB	3300	0.39	B	67	1361	0.41	B	0.02	No
Gird Rd to Sage Rd	2	1599	EB	3300	0.48	B	79	1678	0.51	B	0.02	No	1169	WB	2912	0.40	B	67	1236	0.42	B	0.02	No
Sage Rd to Old Hwy 395	2	1596	EB	2300	0.69	C	79	1675	0.73	D	0.03	No	1381	WB	3300	0.42	B	67	1448	0.44	B	0.02	No
Old Hwy 395 to I-15 SB Ramps	2	1454	EB	3030	0.48	B	32	1486	0.49	B	0.01	No	1498	WB	2028	0.74	D	33	1531	0.75	D	0.02	No
I-15 SB Ramps to I-15 NB Ramps	2	1222	EB	3030	0.40	B	135	1357	0.45	B	0.04	No	1086	WB	3030	0.36	B	199	1285	0.42	B	0.07	No
I-15 NB Ramps to Pankey Rd	2	1106	EB	3100	0.36	B	343	1449	0.47	B	0.11	No	780	WB	3030	0.26	A	282	1062	0.35	B	0.09	No
Pankey Rd to Horse Ranch Creek Rd	2	934	EB	1806	0.52	C	346	1280	0.71	C	0.19	No	1050	WB	2028	0.52	C	307	1357	0.67	C	0.15	No
Horse Ranch Creek Rd to Rice Cyn	2	1219	EB	1806	0.67	C	61	1280	0.71	C	0.03	No	1291	WB	2028	0.64	C	66	1357	0.67	C	0.03	No
Rice Cyn to Couser Cyn	2	977	EB	3100	0.32	B	55	1032	0.33	B	0.02	No	1282	WB	2382	0.54	C	61	1343	0.56	C	0.03	No

Source: SANDAG, higher volumes used btw Series 10 (2030) Cumulative Map and Series 11 (2030) coverage. Notes: Dir = Direction. Vol = Volume. Cap = Capacity.
v/c = volume to capacity ratio. LOS = Level of Service. P: Project.

TABLE 34: HORIZON YEAR (2030) + PROJECT FREEWAY VOLUMES AND LEVEL OF SERVICE

Freeway Segment	I-15 Rainbow Valley Blvd to Mission Rd				I-15 Mission Rd to SR-76 (Pala Rd)				I-15 SR-76 to Escondido Hwy (Old 395)			
SANDAG (Horizon Year)												
ADT	275,000				251,000				231,000			
Peak Hour	A M		P M		A M		P M		A M		P M	
Direction	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB	NB	SB
Number of Lanes	4	4	4	4	4	4	4	4	4	4	4	4
Capacity (1)	9,400	9,400	9,400	9,400	9,400	9,400	9,400	9,400	9,400	9,400	9,400	9,400
K Factor (2)	0.0619	0.0619	0.0738	0.0738	0.0619	0.0619	0.0738	0.0738	0.0590	0.0590	0.0723	0.0723
D Factor (3)	0.5064	0.4936	0.5064	0.4936	0.5075	0.4925	0.5075	0.4925	0.4917	0.5083	0.4917	0.5083
Truck Factor (4)	0.9186	0.9186	0.9186	0.9186	0.9186	0.9186	0.9186	0.9186	0.8977	0.8977	0.8977	0.8977
Peak Hour Volume	9,384	9,147	11,188	10,905	8,584	8,330	10,234	9,931	7,465	7,717	9,148	9,457
Volume to Capacity	1.00	0.97	1.19	1.16	0.91	0.89	1.09	1.06	0.79	0.82	0.97	1.01
LOS	F	E	F	F	D	D	F	F	C	D	E	F
Project Pk Hr Vol	99	68	97	136	14	9	13	19	73	86	128	102
SANDAG (Horizon Year + Project)												
Peak Hour Volume	9,483	9,215	11,285	11,041	8,598	8,339	10,247	9,950	7,538	7,803	9,276	9,559
Volume to Capacity	1.01	0.98	1.20	1.17	0.91	0.89	1.09	1.06	0.80	0.83	0.98	1.02
LOS	F	E	F	F	D	D	F	F	D	D	E	F
Increase in V/C	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
County Impact?	No	No	No	No	No	No	No	No	No	No	No	No
CMP Impact?	No	No	No	No	No	No	No	No	No	No	No	No

Notes: (1) Capacity of 2,350 passenger cars per hour per lane from Caltrans' Guide for the Preparation of Traffic Impact Studies, Dec 2002. (2) Latest K factor from Caltrans (based on 2005 data), which is the percentage of Annual Average Daily Traffic (AADT) in both directions. (3) D factor from SANDAG Series 11 split for year 2030, which when multiplied by K and ADT will provide peak hour volume. (4) Latest truck factor from Caltrans (based on 2000 data). CMP: Congestion Management Program.

3.9 Ramps

Per Caltrans' personnel, on-ramp meters are typically installed if demand warrants metering based on actual conditions. Thus, an on-ramp metering analysis was not done as part of this traffic study.

3.10 Congestion Management Program

To meet the CMP analysis requirements, a computerized traffic model was utilized and the CMP thresholds were applied to the study elements and shown in the appropriate LOS tables.

3.11 Hazards Due To An Existing Transportation Design Feature

Design standards are continually updated, and as such, existing roadways have been constructed per older standards creating potential hazards according to current standards.

State Route 76 has several potential hazards as identified in the *SR-76 East Corridor Study* prepared by Reservation Transportation Authority dated March 2007 (excerpts included in **Appendix T**). In vicinity of the project, the identified potential hazards on SR-76 include a curve correction from Post Mile (PM) 18.80 to 19.00 and left turn channelization at Rice Canyon Road PM 19.39.

3.12 Hazards To Pedestrians or Bicyclists

Any required improvements will be constructed to maintain existing conditions or meet County standards as they relate to pedestrians and bicyclists. New trails for pedestrians and bicyclists are proposed throughout the development. A trails graphic is included at the end of **Appendix U**.

3.13 Parking Capacity

In addition to meeting the County parking requirements, the project provides an additional 423 parking spaces overall as shown in **Table 35**.

TABLE 35: PARKING CAPACITY

Area and Land Use		Parking Rate per County Code	Units or Size	Parking Required	Parking Provided
Multi-Family 1					
	Residential (3 BR)	2 spaces/unit	92 units	184	184
	Residential (2 BR)	1.5 spaces/unit	100 units	150	200
	Guest	0.2 spaces/unit	192 units	38	75
Multi-Family 2					
	Residential (3 BR)	2 spaces/unit	48 units	96	96
	Residential (2 BR)	1.5 spaces/unit	18 units	27	36
	Guest	0.2 spaces/unit	66 units	13	19
Multi-Family 3					
	Residential (3 BR)	2 spaces/unit	189 units	378	378
	Guest	0.2 spaces/unit	189 units	38	127
Multi-Family 4					
	Residential (3 BR)	2 spaces/unit	108 units	216	216
	Guest	0.2 spaces/unit	108 units	22	84
Professional Office 1					
	Office	4.5 spaces/1,000 sf	40,000 sf	180	189
Professional Office 2					
	Office	4.5 spaces/1,000 sf	117,000 sf	527	531
Town Center					
	Retail	4.5 spaces/1,000 sf	49,200 sf	221	237
	Restaurant	12 spaces/1,000 sf	12,000 sf	144	154
Sports Complex					
	Participant Sport	5 spaces/1,000 sf	2,400 sf	12	71
	Recreation Lot	None	NA	0	31
Pump Station/Staging Area					
	Pump Station & Staging Area	None	NA	0	41
		Total Required Parking and Provided Parking		**2,246**	**2,669**
			Additional Parking		**423**

NA: Not Applicable. Recreation lot and staging areas do no have rates identified in the County parking schedules.

3.14 Alternative Transportation

No nearby transit service routes are published; however, the project applicant will work with applicable transit authorities to promote transit service with bus turnouts that will serve the proposed project. Campus Park in combination with the surrounding projects will create the ideal General

Plan Update transit area – a mixed-use development of residential, retail, office, park, and higher education uses. Transit service, including bus turn-outs, is planned along Horse Ranch Creek Road. Campus Park proposes to locate high density housing closer to the transit service. In addition, project trails and pathways will provide easy accessibility for all residents of Campus Park.

3.15 Project Access and On-Site Circulation

On-site circulation is proposed by several new roadways as shown on the site plans.

4.0 Impact Summary

4.1 Impact Summary Table

The project is calculated to have direct and cumulative impacts based on the County of San Diego and Congestion Management Program significance criteria. There are several intersections and roadway segments that will be constructed by the applicant for access to the project site. Because these intersections and roadway segments currently do not exist, they could not be analyzed and identified as impacted locations. Therefore, the proposed intersections and roadway segments needed for access to the project site are described in Section 5. The direct and cumulative impact findings are summarized below in **Table 36**.

TABLE 36: IMPACT SUMMARY TABLE

Facility	Direct Impact Locations	Cumulative Impact Locations
Intersections	1) SR-76/I-15 NB Ramp (#7) 2) Old Hwy 395/Reche Road (#15)	1) SR-76/Melrose Dr 2) SR-76/E Vista Way 3) SR-76/North River Rd 4) SR-76/Olive Hill Rd 5) SR-76/S Mission Rd 6) SR-76/Via Monserate 7) SR-76/Gird Rd 8) SR-76/Sage Road 9) SR-76/Old Hwy 395 10) SR-76/I-15 SB Ramp 11) SR-76/I-15 NB Ramp 12) SR-76/Pankey Road 13) SR-76/Rice Canyon Road 14) SR-76/Couser Canyon Road 15) Mission Rd at Old Hwy 395 16) Mission Road at I-15 SB Ramp 17) Mission Road at I-15 NB Ramp 18) Old Hwy 395/Reche Rd 19) Old Hwy 395/Stewart Canyon Rd 20) Old Hwy 395/Pala Mesa Dr 21) Old Hwy 395/Dulin Rd 22) Reche Rd/Live Oak Park Rd
Segments and State Routes	1) SR-76 (S Mission Rd to Gird Rd) 2) SR-76 (Sage Rd to Old Hwy 395) 3) SR-76 (I-15 SB Ramp to I-15 NB Ramp) 4) SR-76 (Horse Ranch Creek Rd to Couser Canyon Rd)	1) Old Hwy 395 from E Mission Rd to W Lilac Rd 2) Reche Rd from Green Canyon Norte to Gird Rd 3) Pankey Rd from SR-76 to Shearer Crossing 4) Pala Mesa Dr from Wilt Rd/Sage Rd to Old Hwy 395 5) SR-76 Melrose Dr to Old Hwy 395 6) SR-76 from I-15 SB Ramp to I-15 NB Ramp 7) SR-76 from Horse Ranch Creek Rd to Pala Mission Rd
Freeways	None	None
Ramps	None	None
Driveway Spacing	Applicant to submit a copy of the Modification to Road Standard Request under separate cover	Applicant to submit a copy of the Modification to Road Standard Request under separate cover

4.2 Road Segments

4.2.1 Guidelines for the Determination of Significance

Based on the San Diego County *Guidelines for Determining Significance and Report Format and Content Requirements Transportation and Traffic*, December 5, 2007, a project may have a direct and or cumulative impact if the significance criteria are exceeded as shown in **Table 37**.

TABLE 37: COUNTY OF SAN DIEGO SIGNIFICANT TRAFFIC IMPACT THRESHOLDS – ROAD SEGMENTS

Measures of Significant Project Impacts to Congestion Allowable Increases on Congested Roads			
	Road Segments		
Operations	2-Lane Road	4-Lane Road	6-Lane Road
LOS E	200 ADT	400 ADT	600 ADT
LOS F	100 ADT	200 ADT	300 ADT

Source: County of San Diego *Guidelines for Determining Significance* Table 1 from page 13.

A direct impact would occur when the significance criteria is exceeded. If the proposed project exceeds the values provided in the above table, then the individually proposed project would result in a direct traffic impact. Specific improvements to mitigate direct impacts must be identified.

A cumulative impact would occur when two conditions are met: 1) will build-out of all near-term projects result in a cumulative traffic impact and 2) does the amount of traffic generated by the individual proposed project contribute (even in a small part) to that cumulative impact. Both conditions must be met for an individual project to result in a cumulative traffic impact. If the traffic generated from all the near-term projects (cumulative projects) would result in a cumulative traffic impact then condition one is met. If the total amount of traffic generated exceeds the values provided in the above table, then condition two is met and the individually proposed project would result in a cumulative traffic impact. Fair-share contributions toward cumulative impacts may only be provided when a specific project and schedule for completion of the project has been identified.

The County of San Diego *Guidelines for Determining Significance and Report Format and Content Requirements Transportation and Traffic*, dated December 5, 2007 includes a summary of how a project's potential traffic impact would be perceptible to the average driver on roadway segments:

> "Based on these criteria [Table above], an impact from new development on an LOS E road would be reached when the increase in average daily trips (ADT) on a two-lane road exceeds 200 ADT. Using SANDAG's "Brief Guide for Vehicular Traffic Generation Rates for the San Diego Region" for most discretionary projects this would generate less than 25 peak hour trips. On average, during peak hour conditions, this would be only one additional car every 2.4 minutes. Therefore, the addition of 200 ADT, in most cases, would result in changes to traffic flow that would not be noticeable to the average driver and therefore would not constitute a significant impact on the roadway. Significance criteria were also established for four-lane and six-lane roads operating at LOS E and are based upon the above 24 hour ADT significance criterion established for two-lane roads. The two-lane road criterion was doubled to determine impacts to four-lane roads and tripled to determine impacts to six-lane roads. This was considered to be conservative

since the 24 hour per lane road capacity for a 4-lane road is more than double that of a two-lane road and the per lane capacity of a six-lane road is more than triple that of the two-lane road. For LOS E roads, the additional significance criteria are 400 ADT for a four-lane road and 600 ADT for a six-lane road. Similar to criterion for two-lane road, the 400 ADT for a 4-lane road and 600 ADT for a 6-lane road criteria would generate less than 25 per lane peak hour trips for most discretionary projects. On average, during peak hour conditions, this would be only one additional car per lane every 2.4 minutes. The addition of 200 ADT per lane (400 ADT for a 4 lane road or 600 for a 6-lane road), in most cases, would result in changes to traffic flow that would not be noticeable to the average driver and therefore would not constitute a significant impact on the roadway..."

"The second significance criteria listed in [Table above] addresses roadways presently operating at LOS F. Under LOS F congested conditions, small changes and disruptions to the traffic flow on County Circulation Element Road can have a greater effect on traffic operations when compared to other LOS conditions. In order to better account for potential effects of increased traffic on LOS F road more stringent significance criteria was established when compared to that for LOS E. Based on this guidance, an impact from new development on an LOS F road would be reached when the increase in average daily trips (ADT) on a two-lane road exceeds 100. Again, using SANDAG's "Brief Guide for Vehicular Traffic Generation Rates for the San Diego Region" for most discretionary projects this would generate less than 12.5 peak hour trips. On average, during peak hour conditions, this would be only one additional car every 4.8 minutes. The addition of 100 ADT, in most cases, would not be noticeable to the average driver and therefore would not constitute a significant impact on the roadway. The same approach used to determine significance criteria for four-lane and six-lane roads operating at LOS E was used to determine appropriate significance criteria for four-lane and six-lane road operating at LOS F. Based on this approach, the significance criteria for a four-lane road (200 ADT) and for a six-lane road (300 ADT) would generate less than 12.5 per lane peak hour trips for most discretionary projects. On average, during peak hour conditions, this would be only one additional car per lane every 4.8 minutes. The addition of 100 per lane ADT (200 ADT for a 4-lane and 300 ADT for a 6-lane road) would, in most cases, not be noticeable to the average driver and therefore would not constitute a significant impact on the roadway. In summary, under extremely congested LOS F conditions, small changes and disruptions to the traffic flow can significantly affect traffic operations and additional project traffic can increase the likelihood or frequency of these events. Therefore, the LOS F ADT significance criteria was set at 100 ADT (50% of the LOS E threshold) to provide a higher level of assurance that the traffic allowed under the threshold would not significantly impact traffic operation on the road segment."

4.2.2 Significance of Impacts Prior to Mitigation

Without mitigation the calculated direct and cumulative impacts as shown in Table 36 would cause delays beyond the amounts listed as allowable per the significance criteria.

4.3 Intersections (Signalized & Un-signalized)

4.3.1 Guidelines for the Determination of Significance

Based on the San Diego County *Guidelines for Determining Significance and Report Format and Content Requirements Transportation and Traffic*, December 5, 2007, a project may have a direct and or cumulative impact if the significance criteria are exceeded as shown in **Table 38**.

TABLE 38: COUNTY OF SAN DIEGO SIGNIFICANT TRAFFIC IMPACT THRESHOLDS - INTERSECTIONS

Measures of Significant Project Impacts to Congestion Allowable Increases on Congested Intersections		
	Intersections	
Operations	Signalized	Un-signalized
LOS E	Delay of 2 seconds	20 peak hour trips on a critical movement
LOS F	Delay of 1 second, or 5 peak hour trips on a critical movement	5 peak hour trips on a critical movement

Source: County of San Diego *Guidelines for Determining Significance* Table 2 from page 13. Note: A critical movement is one that is experiencing excessive queues.

A direct impact would occur when the significance criteria is exceeded. If the proposed project exceeds the values provided in the above table, then the individually proposed project would result in a direct traffic impact. Specific improvements to mitigate direct impacts must be identified.

A cumulative impact would occur when two conditions are met: 1) will build-out of all near-term projects result in a cumulative traffic impact and 2) does the amount of traffic generated by the individual proposed project contribute (even in a small part) to that cumulative impact. Both conditions must be met for an individual project to result in a cumulative traffic impact. If the traffic generated from all the near-term projects (cumulative projects) would result in a cumulative traffic impact then condition one is met. If the total amount of traffic generated exceeds the values provided in the above table, then condition two is met and the individually proposed project would result in a cumulative traffic impact. Fair-share contributions toward cumulative impacts may only be provided when a specific project and schedule for completion of the project has been identified.

The County of San Diego *Guidelines for Determining Significance and Report Format and Content Requirements Transportation and Traffic*, dated December 5, 2007 includes a summary of how a project's potential traffic impact would be perceptible to the average driver at intersection:

> "The significance criterion for signalized intersections listed in [Table above] allows an increase in the overall delay at an intersection operating at LOS E of two seconds. This is consistent with the capacity threshold contained in the SANDAG's CMP and guidelines established by the City of San Diego. A delay of two seconds is a small fraction of the typical cycle length for a signalized intersection that ranges between 60 and 120 seconds. The likelihood of increased queues forming due to the additional two seconds of delay is low. Therefore, an increased wait time of two seconds, on average, would result in changes to traffic flow that would not be noticeable to the average driver. Therefore the significance guideline for intersections operating at LOS E is two seconds."
>
> "The primary significance criterion for signalized intersections operating at LOS F conditions was based upon increased delay at the intersection. Under LOS F congested

conditions, small changes and disruptions to the traffic flow to signalized intersection can have a greater effect on overall intersection operations when compared to other LOS conditions. In order to better account for potential effects of increased traffic at signalized intersections operating at LOS F, a more stringent guideline was established when compared to signalized intersection operating at LOS E. A significance guideline of an increased delay of 1 second was established for signalized intersections operating at LOS F. An increase in the overall delay at an intersection of one second, on average, would result in changes to traffic flow that would not be noticeable to the average driver. Therefore the significance guideline for intersections operating at LOS F is 1 second."

"Signalized intersections operating at LOS F also have the potential for substantial queuing at specific turning movements that may detrimentally effect overall intersection and/or road segment operations. Thus, an increase of peak hour trips to a critical move was also established as a secondary significance criterion for signalized intersections. A critical movement would be a movement or a lane at an intersection that is experiencing queuing or substantial delay and is affecting the overall operation of the intersection. The increase in peak hour trips to a critical move is a measurement of how many cars can be added to an existing queue. The addition of five trips (peak hour) per critical movement will normally be considered a significant impact. This significance criterion was selected because the five additional trips spread out over the peak hour would not significantly increase the length of an existing queue and would not be noticeable to the average driver (one trip every 12 minutes or 720 seconds). For LOS E intersections, the 5 peak hour trips to a critical movement would not be noticeable to the average driver since the one additional trip during the 12 minute interval on average would clear the traffic signal cycles well within the 12 minute period. It should also be noted that if the 5 additional peak hour trips arrived at the same time, these trips would also clear the traffic cycle and existing queue lengths would be re-established."

"The significance guidelines for unsignalized intersections identify a minimum number of trips added to a critical movement at an unsignalized intersection. Since the operations of unsignalized intersections under congested conditions are heavily influenced by traffic volume increases on critical moves, the significance guidelines for unsignalized intersections were based upon the number of trips added to a critical movement. This guideline directly relates to the number of vehicles that can be added to an existing queue that forms at the intersection. A significance criteria of twenty trips (peak hour) per critical movement was used for LOS E conditions. Although delays drivers experience under LOS E conditions may be noticeable, they are not yet considered unacceptable. The twenty trips spread out over the peak hour would not likely cause the intersection delay or existing queue lengths to become unacceptable. The twenty trips (peak hour) would not be noticeable to the average driver. A significance guideline of five trips (peak hour) per critical movement was used for LOS F conditions. The five trips spread out over the peak hour would not significantly increase the length of an existing queue and would not be noticeable to the average driver."

"The operations of unsignalized intersections under congested conditions are heavily influenced by traffic volumes increases on critical moves. Therefore, the significance guidelines for unsignalized intersections are based upon the number of peak hour trips

added to a critical movement at that intersection. This guideline examines the number of vehicles that may be added to an existing queue that forms at the intersection by the additional traffic generated by a project. In LOS E situations, the delays that drivers experience are noticeable, but are not considered excessive. A peak hour increase of twenty trips to the critical movement of an unsignalized intersection would be, on average, one additional car every 3.0 minutes or 180 seconds. Assuming the average wait time for a vehicle in the critical movement queue is less than 3.0 minutes, which is typical for LOS E conditions, this would not be noticeable to the average driver and would not be considered a significant impact."

"For LOS F conditions, a significance threshold of five trips (peak hour) per critical movement was used. The five trips spread out over the peak hour would not significantly increase the length of an existing queue and would not be noticeable to the average driver. Five trips spread out over an hour would be one car every 12 minutes. This typically exceeds the average wait time in the queue and would not be noticeable to the average driver."

4.3.2 Significance of Impacts Prior to Mitigation

Without mitigation the calculated direct and cumulative impacts as shown in Table 36 would cause delays beyond the amounts listed as allowable per the significance criteria.

4.4 Ramps

Per Caltrans' personnel, on-ramp meters are typically installed if demand warrants metering based on actual conditions. Thus, an on-ramp metering analysis was not done as part of this traffic study.

4.5 Congestion Management Program

To meet the CMP analysis requirements, a computerized traffic model was utilized and the CMP thresholds were applied to the study elements and shown in the appropriate LOS tables.

4.6 Hazards Due To An Existing Transportation Design Feature

State Route 76 has several potential hazards as identified in the *SR-76 East Corridor Study* prepared by Reservation Transportation Authority dated March 2007. In vicinity of the project, the identified potential hazards on SR-76 include a curve correction from Post Mile (PM) 18.80 to 19.00 and left turn channelization at Rice Canyon Road PM 19.39. New alignments and widening of SR-76 east of I-15 are proposed by the Granite Construction Company and the Warner Ranch project applicant that will mitigate the aforementioned potential hazards.

4.7 Hazards To Pedestrians or Bicyclists

Any required improvements will be constructed to maintain existing conditions or meet County standards as they relate to pedestrians and bicyclists. New trails for pedestrians and bicyclists are proposed throughout the development. A trails graphic is included in **Appendix U**.

4.8 Parking Capacity

The parking capacity exceeds the required parking by an additional 423 spaces as documented previously in Table 35. Required parking and provided parking for the various project elements are identified on the project plans.

4.9 Alternative Transportation

No nearby transit service routes are published; however, the project applicant will work with applicable transit authorities to promote transit service with bus turnouts that will serve the proposed project. Campus Park in combination with the surrounding projects will create the ideal General Plan Update transit area – a mixed-use development of residential, retail, office, park, and higher education uses. Transit service, including bus turn-outs, is planned along Horse Ranch Creek Road. Campus Park proposes to locate high density housing closer to the transit service. In addition, project trails and pathways will provide easy accessibility for all residents of Campus Park.

4.10 Project Access and On-Site Circulation

All project roadway designs will be submitted under separate cover to meet County safety standards. Horse Ranch Creek Road shall be designed per General Plan Update Boulevard Standards. Pala Mesa Road and Pankey Place/Street R will be designed per current adopted County standards. The proposed internal roads and cul-de-sac streets would provide efficient on-site circulation and logical connections to Horse Ranch Creek Road. All internal streets would be constructed with streetlights and standard curbs and gutters and are designed to accommodate anticipated long-term traffic volumes. On-street parking would be permitted along both sides of all proposed internal roads and cul-de-sac streets. Parking would not be permitted along Horse Ranch Creek Road.

All intersection designs will also be submitted under separate cover to meet County safety standards. Off-site improvements to several area intersections and street segments are proposed to accommodate Project traffic and reduce traffic congestion in the Fallbrook area.

4.10.1 Project Driveway Corner Sight Distance Analysis

Landmark Consulting will submit under separate cover a request for a modification to a road standard for the project as related to driveway corner sight distance requirements.

4.10.2 Project Driveway Spacing Analysis

Landmark Consulting will submit under separate cover a request for a modification to a road standard for the project as related to driveway spacing requirements.

4.10.3 Project Landscaping Along Right-of-Way

The landscaping plan will be evaluated for safety under separate cover.

5.0 Summary of Project Impacts, Mitigation, and Design Features

The project is calculated to have direct and cumulative impacts based on the County of San Diego and Congestion Management Program significance criteria. This section describes the mitigation measures required to bring the calculated impacts to below a level of significance, and documents the intersections and roadways proposed for construction as part of the project. Additionally, the existing widening of SR-76 east of I-15 is described in this section because the additional capacity based on the widening was accounted for in the analysis.

5.1 Direct Project Impacts and Recommended Mitigation Measures

The project is calculated to have direct impacts at two intersections and along six state route segments.

The direct intersection impacts are calculated to operate at acceptable levels of service with the proposed mitigation measures as shown in **Table 39** (Intersection calculations and the signal warrant for Old Highway 395 at Reche Road are included in **Appendix V**).

TABLE 39: DIRECT IMPACT INTERSECTION OPERATIONS WITH RECOMMENDED MITIGATION MESURES

Intersection & (Analysis)[1]	Move-ment	Peak Hour	Existing		Existing + Project				County Sig[6]	CMP Sig[7]
			Delay[2]	LOS[3]	Delay[2]	LOS[3]	Delta[4]	CM Vol[5]		
7) SR-76 (Pala Rd) at	All	AM	22.4	C	28.6	C	6.2	NA	No	No
I-15 NB Ramps (S)	All	PM	46.7	D	63.7	**E**	17.0	NA	**Yes**	**Yes**
With Mitigation of adding a one clover leaf to the interchange (mitigates the impact as shown below with acceptable LOS)										
7) SR-76 (Pala Rd) at	All	AM			11.2	B	NA	NA	No	No
I-15 NB Ramps (S)	All	PM			21.4	C	NA	NA	No	No
15) Old Highway 395 at	EB LR	AM	18.4	C	39.5	**E**	NA	20	**Yes**	NA
Reche Road (U)	EB LR	PM	35.9	**E**	219.2	**F**	NA	45	**Yes**	NA
	All	AM	10.6	B	17.6	B	7.0	NA	NA	No
	All	PM	17.6	B	77.9	**F**	60.3	NA	NA	**Yes**
With Mitigation of installing a traffic signal with no additional lanes (mitigates the impact as shown below with acceptable LOS)										
15) Old Highway 395 at	All	AM	15.1	B	18.4	B	3.3	NA	No	No
Reche Road (S)	All	PM	18.5	B	26.5	C	8.0	NA	No	No

Notes: 1) Intersection Analysis - (S) Signalized, (U) Unsignalized 2) Delay - HCM Control Delay in seconds. 3) LOS: Level of Service. 4) Delta is the increase in delay from project. 5) CM Vol: Critical Movement Volume used to show project volumes on the critical movement. 6) County Sig: is the project have a calculated impact based on the critical volume (Yes or No). 7) CMP Sig: Congention Mangement Program significant impact based on CMP criteria (Yes or No). *DNE: Does Not Exist. NA: Not Applicable*

Direct impacts to the six SR-76 segments are calculated to operate at acceptable levels of service with improvements proposed as part of the Caltrans SR-76 East Project or the TIF program. If Caltrans or the County does not construct these improvements before the Campus Park project issues certificates of occupancy, then these impacts would remain unmitigated and the applicant may request overrides. The levels of service without and with the Caltrans and TIF mitigation measures are shown in **Table 40a and 40b**.

TABLE 40A: DIRECT IMPACT STATE ROUTE SEGMENT OPERATIONS WITH RECOMMENDED MITIGATION MESURES (AM)

State Route 76	Lanes in	AM (Eastbound)					Project				Change In		AM (Westbound)					Project				Change In	
Study Limits	each dir	Vol	Dir	Cap	v/c	LOS	Vol	E+P	v/c	LOS	v/c	Sig	Vol	Dir	Cap	v/c	LOS	Vol	E+P	v/c	LOS	v/c	Sig
S Mission Rd to Via Monserate	1	745	EB	950	0.78	D	47	792	0.83	D	0.05	No	901	WB	950	0.95	E	46	947	1.00	E	0.05	Yes
Via Monserate to Gird Rd	1	808	EB	950	0.85	D	49	857	0.90	E	0.05	Yes	895	WB	950	0.94	E	51	946	1.00	E	0.05	No
I-15 SB Ramps to I-15 NB Ramps	1	844	EB	950	0.89	E	83	927	0.98	E	0.09	Yes	539	WB	950	0.57	C	157	696	0.73	D	0.17	No
With Mitigation of an additional one travel lane in each direction as part of the Caltrans SR-76 East project.																							
S Mission Rd to Via Monserate	2	745	EB	3164	0.24	A	47	792	0.25	A	0.01	No	901	WB	3300	0.27	A	46	947	0.29	A	0.01	No
Via Monserate to Gird Rd	2	808	EB	3300	0.24	A	49	857	0.26	A	0.01	No	895	WB	3162	0.28	A	51	946	0.30	A	0.02	No
I-15 SB Ramps to I-15 NB Ramps	2	844	EB	3030	0.28	A	83	927	0.31	A	0.03	No	539	WB	3030	0.18	A	157	696	0.23	A	0.05	No

Source: SANDAG Hwycov 2007. Notes: Dir = Direction. Vol = Volume. Cap = Capacity. v/c = volume to capacity ratio. LOS = Level of Service.

TABLE 40B: DIRECT IMPACT STATE ROUTE SEGMENT OPERATIONS WITH RECOMMENDED MITIGATION MESURES (PM)

State Route 76	Lanes in	PM (Eastbound)					Project				Change In		PM (Westbound)					Project				Change In	
Study Limits	each dir	E Vol	Dir	Cap	v/c	LOS	Vol	E+P	v/c	LOS	v/c	Sig	E Vol	Dir	Cap	v/c	LOS	Vol	E+P	v/c	LOS	v/c	Sig
S Mission Rd to Via Monserate	1	1064	EB	950	1.12	F	73	1137	1.20	F	0.08	Yes	618	WB	950	0.65	C	64	682	0.72	D	0.07	No
Via Monserate to Gird Rd	1	1077	EB	950	1.13	F	79	1156	1.22	F	0.08	Yes	786	WB	950	0.83	D	67	853	0.90	E	0.07	Yes
Sage Rd to Old Hwy 395	1	638	EB	950	0.67	C	79	717	0.75	D	0.08	No	768	WB	950	0.81	D	67	835	0.88	E	0.07	Yes
I-15 SB Ramps to I-15 NB Ramps	1	718	EB	950	0.76	D	135	853	0.90	E	0.14	Yes	1153	WB	950	1.21	F	199	1352	1.42	F	0.21	Yes
With Mitigation of an additional one travel lane in each direction as part of the Caltrans SR-76 East project.																							
S Mission Rd to Via Monserate	2	1064	EB	3300	0.32	B	73	1137	0.34	B	0.02	No	618	WB	2122	0.29	A	64	682	0.32	B	0.03	No
Via Monserate to Gird Rd	2	1077	EB	2912	0.37	B	79	1156	0.40	B	0.03	No	786	WB	3300	0.24	A	67	853	0.26	A	0.02	No
Sage Rd to Old Hwy 395	2	638	EB	2300	0.28	A	79	717	0.31	B	0.03	No	768	WB	3300	0.23	A	67	835	0.25	A	0.02	No
I-15 SB Ramps to I-15 NB Ramps	2	718	EB	3030	0.24	A	135	853	0.28	A	0.04	No	1153	WB	3030	0.38	B	199	1352	0.45	B	0.07	No
Horse Ranch Creek Rd to Rice Cyn	1	631	EB	950	0.66	C	61	692	0.73	D	0.06	No	897	WB	950	0.94	E	66	963	1.01	F	0.07	Yes
Rice Cyn to Couser Cyn	1	526	EB	950	0.55	C	55	581	0.61	C	0.06	No	930	WB	950	0.98	E	61	991	1.04	F	0.06	Yes
With Mitigation of an additional one travel lane in each direction as part of the TIF program.																							
Horse Ranch Creek Rd to Rice Cyn	2	631	EB	1806	0.35	B	61	692	0.38	B	0.03	No	897	WB	2028	0.44	B	66	963	0.47	B	0.03	No
Rice Cyn to Couser Cyn	2	526	EB	3100	0.17	A	55	581	0.19	A	0.02	No	930	WB	2382	0.39	B	61	991	0.42	B	0.03	No

Source: SANDAG Hwycov 2007. Notes: Dir = Direction. Vol = Volume. Cap = Capacity. v/c = volume to capacity ratio. LOS = Level of Service.

5.2 Cumulative Project Impacts and Recommended Mitigation Measures

The project is calculated to have cumulative impacts at 22 intersections, on 11 individual roadway segments (4 contiguous segments), and along 12 individual state route segments (3 contiguous state route segments)

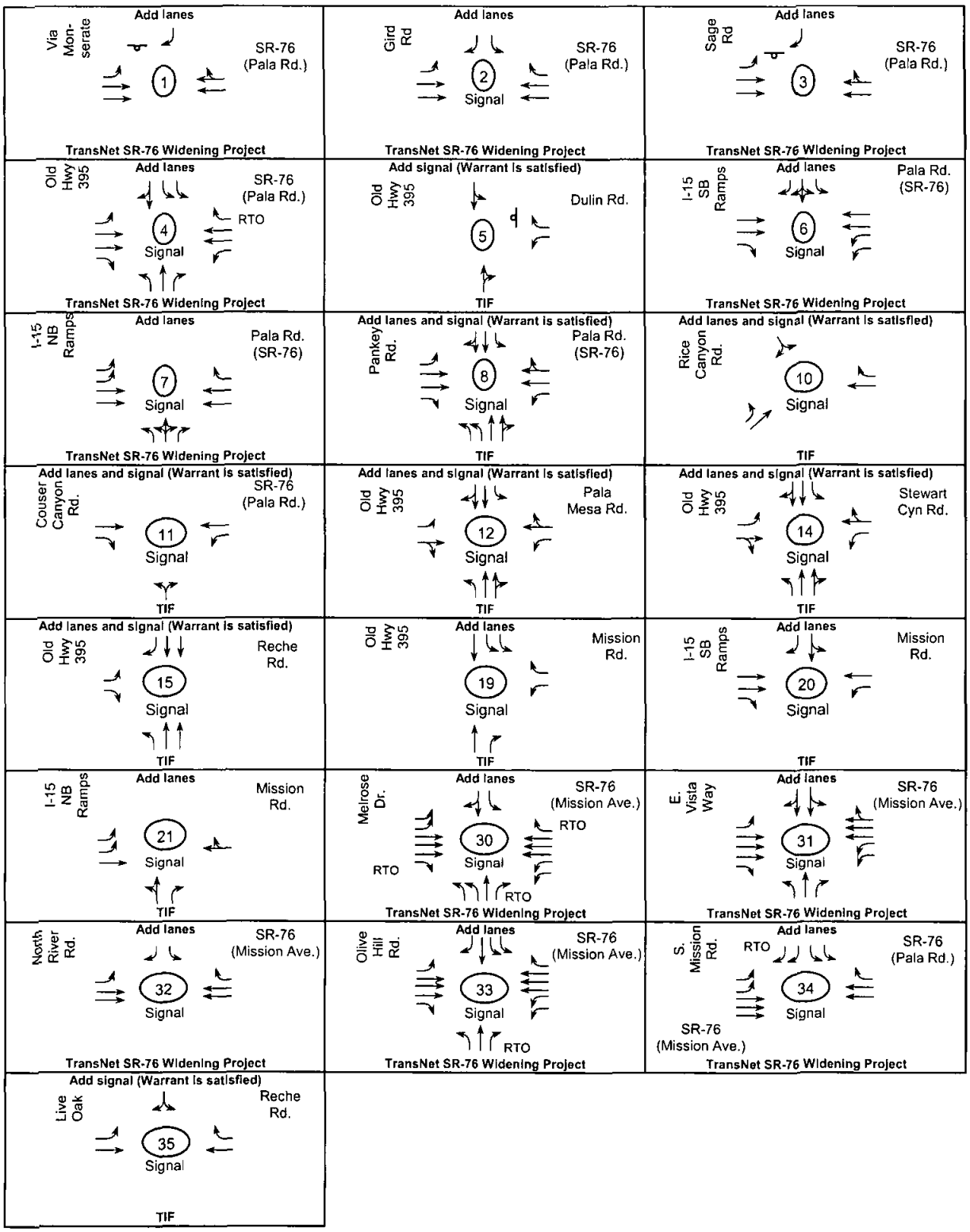
The cumulative intersection impacts are calculated to operate at acceptable levels of service with mitigation measures that would be part of the TransNet SR-76 widening or TIF improvements as shown in **Table 41** with proposed intersection lane configurations shown in **Figure 27**. The proposed intersection configurations proposed as part of the TransNet SR-76 widening project, the signal warrant calculations for the proposed signalizations, and intersection LOS calculations are included in **Appendix W**.

TABLE 41: CUMULATIVE IMPACT INTERSECTION OPERATIONS WITH RECOMMENDED MITIGATION MEASURES

Intersection & (Analysis)[1]	Movement	Peak Hour	Existing+Cumulative+Project					Cumulative Impact?
			Without Mitigation		Mitigation	With Mitigation		
			Delay[2]	LOS[3]	(See Fig 27)	Delay[2]	LOS[3]	
1) SR-76 (Pala Rd) at	SB LR	AM	>500	F		31.1	D	No
Via Monserate (U)	SB LR	PM	>500	F	Add	22.3	C	No
	All	AM	>500	F	lanes	0.8	C	No
	All	PM	>500	F		0.6	B	No
2) SR-76 (Pala Rd) at	All	AM	59.1	D	Add	11.8	B	No
Gird Rd (S)	All	PM	118.0	F	lanes	14.1	B	No
3) SR-76 (Pala Rd) at	SB LR	AM	40.2	E		17.6	C	No
Sage Rd (U)	SB LR	PM	39.3	E	Add	17.7	C	No
	All	AM	>500	F	lanes	0.2	A	No
	All	PM	>500	F		0.2	A	No
4) SR-76 (Pala Rd) at	All	AM	268.7	F	Add	44.1	D	No
Old Hwy 395 (S)	All	PM	266.1	F	lanes	42.9	D	No
5) Old Hwy 395 at	WB LR	AM	32.9	D	Install	2.4	A	No
Dulin Rd (U)	WB LR	PM	56.4	F	Traffic Signal	4.5	A	No
6) SR-76 (Pala Rd) at	All	AM	107.0	F	Add	25.3	C	No
I-15 SB Ramps (S)	All	PM	140.1	F	lanes	26.1	C	No
7) SR-76 (Pala Rd) at	All	AM	86.6	E	Add	29.1	C	No
I-15 NB Ramps (S)	All	PM	121.2	F	lanes	28.9	C	No
8) SR-76 (Pala Rd) at	NB LTR	AM	>500	F	Install			
Pankey Road (U)	NB LTR	PM	>500	F	AM	24.4	C	No
	SB LTR	AM	>500	F	PM	48.8	D	No
	SB LTR	PM	>500	F	Traffic Signal			
10) SR-76 (Pala Rd) at	SB LR	AM	211.4	F	Install	15.1	B	No
Rice Canyon Road (U)	SB LR	PM	>500	F	Traffic Signal	23.6	C	No
11) SR-76 (Pala Rd) at	NB LR	AM	86.2	F	Install	13.9	B	No
Couser Canyon Road (U)	NB LR	PM	427.4	F	Traffic Signal	14.6	B	No
12) Old Highway 395 at	EB LR	AM	>500	F	Install	29.9	C	No
Pala Mesa Dr (U)	EB LR	PM	>500	F	Traffic Signal	46.9	D	No
14) Old Highway 395 at	WB LTR	AM	>500	F	Install	17.3	B	No
Stewart Canyon Road (U)	WB LTR	PM	>500	F	Traffic Signal	25.2	C	No
15) Old Highway 395 at	EB LR	AM	>500	F	Install			
Reche Road (U)	EB LR	PM	>500	F	AM	23.3	C	No
	All	AM	>500	F	PM	46.7	D	No
	All	PM	>500	F	Traffic Signal			
19) Mission Road at	SB L	AM	54.8	D	Add	26.0	C	No
Old Highway 395 (S)	SB L	PM	113.0	F	lanes	31.8	C	No
20) Mission Road at	SB LTR	AM	75.6	E	Add	30.3	C	No
I-15 SB Ramps (S)	SB LTR	PM	87.5	E	lanes	23.2	C	No
21) Mission Road at	All	AM	31.8	C	Add	18.2	B	No
I-15 NB Ramps (S)	All	PM	95.8	F	lanes	27.9	C	No
30) SR-76 (Mission Ave) at	All	AM	129.5	F	Add	54.6	D	No
Melrose Drive (S)	All	PM	80.7	F	lanes	35.4	D	No
31) SR-76 (Mission Ave) at	All	AM	282.1	F	Add	39.8	D	No
E. Vista Way (S)	All	PM	261.1	F	lanes	53.6	D	No
32) SR-76 (Mission Ave) at	All	AM	317.1	F	Add	28.2	C	No
North River Rd (S)	All	PM	267.3	F	lanes	27.0	C	No
33) SR-76 (Mission Ave) at	All	AM	275.6	F	Add	44.5	D	No
Olive Hill Rd (S)	All	PM	184.1	F	lanes	54.6	D	No
34) SR-76 (Mission Ave) at	All	AM	61.4	E	Add	41.3	D	No
S. Mission Rd (S)	All	PM	88.0	F	lanes	36.2	D	No
35) Reche Rd at	SB LR	AM	45.3	E	Install	12.8	B	No
Live Oak Park Rd (U)	SB LR	PM	26.3	D	Traffic Signal	10.2	B	No

Notes: 1) Intersection Analysis - (S).Signalized, (U) Unsignalized 2) Delay - HCM Average Delay in seconds. 3) LOS: Level of Service.

Figure 27: Intersection Mitigation Measures for Cumulative Impacts



The cumulative segment impacts are calculated to operate at acceptable levels of service with mitigation measures that would be part of the TIF program, or require classification adjustments as noted in **Table 42**.

TABLE 42: CUMULATIVE IMPACT SEGMENT OPERATIONS WITH RECOMMENDED MITIGATION MEASURES

Segment	As built	Existing + Cumulative + Project				TIF mitigation (higher btw TIF & Circ Elem)	Existing + Cumulative + Project				
		Daily Volume	LOS E Capacity	V/C	LOS		Daily Volume	LOS E Capacity	V/C	LOS	Cumulative Impact?
Old Highway 395											
East Mission Road to Reche Road	2 lanes	19,900	16,200	1.23	F	Collector	19,900	34,200	0.58	B	No
Reche Road to Stewart Canyon Road	2 lanes	23,300	16,200	1.44	F	Collector	23,300	34,200	0.68	C	No
Stewart Canyon Road to Tecalote Lane	2 lanes	17,600	16,200	1.09	F	Collector	17,600	34,200	0.51	B	No
Tecalote Lane to Pala Mesa Drive	2 lanes	19,400	16,200	1.20	F	Collector	19,400	34,200	0.57	B	No
Pala Mesa Drive to SR-76 (Pala Road)	2 lanes	20,900	16,200	1.29	F	Collector	20,900	34,200	0.61	B	No
SR-76 (Pala Road) to Dulin Road	2 lanes	14,800	16,200	0.91	E	Collector	14,800	34,200	0.43	B	No
Dulin Road to W. Lilac Road	2 lanes	17,200	16,200	1.06	F	Collector	17,200	34,200	0.50	B	No
Reche Road											
Green Cny Norte to Live Oak Park Rd	2 lanes	13,800	16,200	0.85	E	Collector[1]	13,800	34,200	0.40	B	No
Live Oak Park Road to Gird Road	2 lanes	12,100	16,200	0.75	E	Town Collector	12,100	19,000	0.64	D	No
Pankey Road											
SR-76 (Pala Road) to Dulin Rd	2 lanes	11,902	16,200	0.73	E	Collector	11,902	34,200	0.35	A	No
Pala Mesa Drive											
Wilt Rd/Sage Rd to Old Highway 395	2 lanes	11,500	16,200	0.71	E	Town Collector[2]	11,500	19,000	0.61	D	No

Daily volume is a 24 hour volume. LOS: Level of Service. V/C: Volume to Capacity ratio. [1]Collector exceeds circulation element classification of rural collector and TIF recommended classification of town collector; however, collector cross section of 84 feet matches rural collector cross section of 84 feet. [2]Town Collector exceed circulation element classification of light collector; however, town collector requires 74 feet of ROW vs. the light collector ROW of 60 feet (an additional 14 feet).

The cumulative state route segment impacts are calculated to operate at acceptable levels of service with mitigation measures of widening from 2 to 4 lanes that would be part of the TransNet SR-76 widening project and the TIF program, with the exception of the SR-76 from Melrose Drive to S Mission Road. SR-76 from Melrose Drive to S Mission Road has a current circulation element classification of Expressway (6 lane divided roadway) and when analyzed as such it is calculated to operate at acceptable levels of service. The TIF program provides an overall revenue program to address existing and forecasted deficiencies; therefore, contribution to the TIF will provide sufficient mitigation for cumulative impacts to SR-76. The peak hour state route calculations are shown below in **Tables 43a and 43b** while the County circulation element classification ADT calculations are shown in **Table 44** (ADT volumes for SR-76 obtained from the Series 10 Cumulative Map traffic model and included in Appendix W).

TABLE 43A: CUMULATIVE IMPACT STATE ROUTE SEGMENT OPERATIONS WITH RECOMMENDED MITIGATION MEASURES (AM)

State Route 76	Lanes in	E	AM (Eastbound)				C+P	E+C+P			v/c	Cumulative	E	AM (Westbound)				C+P	E+C+P			v/c	Cumulative
Study Limits	each dir	Vol	Dir	Cap	v/c	LOS	Vol	Vol	v/c	LOS	Delta	Impact?	Vol	Dir	Cap	v/c	LOS	Vol	Vol	v/c	Sig	Delta	Impact?
Melrose Dr to E. Vista Way	2	999	EB	2356	0.42	B	369	1368	0.58	C	0.16	No	1469	WB	2010	0.73	D	947	2416	1.20	F	0.47	Yes***
E. Vista Way to North River Rd	2	718	EB	2122	0.34	B	469	1187	0.56	C	0.22	No	1040	WB	1904	0.55	C	944	1984	1.04	F	0.50	Yes***
North River Rd to Olive Hill Rd	2	852	EB	1904	0.45	B	539	1391	0.73	D	0.28	No	1200	WB	2122	0.57	C	1221	2421	1.14	F	0.58	Yes***
Olive Hill Rd to S Mission Rd	2	1031	EB	2122	0.49	B	467	1498	0.71	C	0.22	No	1245	WB	1904	0.65	C	1322	2567	1.35	F	0.69	Yes***
S Mission Rd to Via Monserate	2	745	EB	3164	0.24	A	347	1092	0.35	B	0.11	No	901	WB	2122	0.42	B	832	1733	0.82	D	0.39	No
Via Monserate to Gird Rd	2	808	EB	3300	0.24	A	332	1140	0.35	B	0.10	No	895	WB	3164	0.28	A	901	1796	0.57	C	0.28	No
Gird Rd to Sage Rd	2	740	EB	3300	0.22	A	391	1131	0.34	B	0.12	No	542	WB	2912	0.19	A	797	1339	0.46	B	0.27	No
Sage Rd to Old Hwy 395	2	760	EB	1904	0.40	B	458	1218	0.64	C	0.24	No	534	WB	3300	0.16	A	827	1361	0.41	B	0.25	No
Old Hwy 395 to I-15 SB Ramps	2	1507	EB	3030	0.50	B	93	1600	0.53	C	0.03	No	665	WB	2028	0.33	B	600	1265	0.62	C	0.30	No
I-15 SB Ramps to I-15 NB Ramps	2	844	EB	3030	0.28	A	178	1022	0.34	B	0.06	No	539	WB	3030	0.18	A	455	994	0.33	B	0.15	No
I-15 NB Ramps to Pankey Rd	2	559	EB	3100	0.18	A	283	842	0.27	A	0.09	No	606	WB	3030	0.20	A	439	1045	0.34	B	0.14	No
Pankey Rd to Horse Ranch Creek Rd	2	589	EB	1806	0.33	B	15	604	0.33	B	0.01	No	540	WB	1956	0.28	A	644	1184	0.61	C	0.33	No
Horse Ranch Creek Rd to Rice Cyn	2*	588	EB	1806	0.33	B	16	604	0.33	B	0.01	No	539	WB	1956	0.28	A	645	1184	0.61	C	0.33	No
Rice Cyn to Couser Cyn	2*	589	EB	3100	0.19	A	1135	1724	0.56	C	0.37	No	540	WB	2382	0.23	A	300	840	0.35	B	0.13	No
Couser Cyn to Pala Mission Rd	2**	634	EB	1900	0.33	B	223	857	0.45	B	0.12	No	357	WB	1900	0.19	A	321	678	0.36	B	0.17	No

Source: SANDAG Year 2030 Cumulative Map. Notes: Dir = Direction. Vol = Volume. Cap = Capacity. v/c = volume to capacity ratio. LOS = Level of Service. E: Existing. C: Cumulative. P: Project. *Mitigation of 2 lanes consistent with current circulation element (capacity from SANDAG coverage). **Mit consistent with current circulation element, capacity of 2 lanes based on doubling existing capacity of 950. *** Cumulative impact mitigated when analyzed under current circulation element classification of Expressway (6 lane divided roadway).

TABLE 43B: CUMULATIVE IMPACT STATE ROUTE SEGMENT OPERATIONS WITH RECOMMENDED MITIGATION MEASURES (PM)

State Route 76	Lanes In	E	PM (Eastbound)					C+P	E+C+P			v/c	Cumulative	E	PM (Westbound)				C+P	E+C+P			v/c	Cumulative
Study Limits	each dir	Vol	Dir	Cap	v/c	LOS	Vol	Vol	v/c	LOS	Delta	Impact?	Vol	Dir	Cap	v/c	LOS	Vol	Vol	v/c	Sig	Delta	Impact?
Melrose Dr to E. Vista Way	2	1456	EB	2356	0.62	C	1195	2651	1.13	F	0.51	Yes***	1001	WB	2336	0.43	B	726	1727	0.74	D	0.31	No
E. Vista Way to North River Rd	2	1107	EB	2122	0.52	C	952	2059	0.97	E	0.45	Yes***	652	WB	1904	0.34	B	767	1419	0.75	D	0.40	No
North River Rd to Olive Hill Rd	2	1176	EB	1904	0.62	C	1417	2593	1.36	F	0.74	Yes***	781	WB	2122	0.37	B	830	1611	0.76	D	0.39	No
Olive Hill Rd to S Mission Rd	2	1457	EB	2122	0.69	C	1119	2576	1.21	F	0.53	Yes***	1069	WB	1904	0.56	C	782	1851	0.97	E	0.41	Yes***
S Mission Rd to Via Monserate	2	1064	EB	3300	0.32	B	1209	2273	0.69	C	0.37	No	618	WB	2122	0.29	A	883	1501	0.71	C	0.42	No
Via Monserate to Gird Rd	2	1077	EB	2912	0.37	B	1000	2077	0.71	D	0.34	No	786	WB	3300	0.24	A	575	1361	0.41	B	0.17	No
Gird Rd to Sage Rd	2	645	EB	3300	0.20	A	755	1400	0.42	B	0.23	No	742	WB	2912	0.25	A	494	1236	0.42	B	0.17	No
Sage Rd to Old Hwy 395	2	638	EB	1904	0.34	B	885	1523	0.80	D	0.46	No	768	WB	3300	0.23	A	680	1448	0.44	B	0.21	No
Old Hwy 395 to I-15 SB Ramps	2	816	EB	3030	0.27	A	670	1486	0.49	B	0.22	No	1258	WB	2028	0.62	C	273	1531	0.75	D	0.13	No
I-15 SB Ramps to I-15 NB Ramps	2	718	EB	3030	0.24	A	639	1357	0.45	B	0.21	No	1153	WB	3030	0.38	B	132	1285	0.42	B	0.04	No
I-15 NB Ramps to Pankey Rd	2	696	EB	3100	0.22	A	753	1449	0.47	B	0.24	No	820	WB	3030	0.27	A	242	1062	0.35	B	0.08	No
Pankey Rd to Horse Ranch Creek Rd	2	631	EB	1806	0.35	B	649	1280	0.71	C	0.36	No	897	WB	2028	0.44	B	460	1357	0.67	C	0.23	No
Horse Ranch Creek Rd to Rice Cyn	2*	631	EB	1806	0.35	B	649	1280	0.71	C	0.36	No	897	WB	2028	0.44	B	460	1357	0.67	C	0.23	No
Rice Cyn to Couser Cyn	2*	526	EB	3100	0.17	A	506	1032	0.33	B	0.16	No	930	WB	2382	0.39	B	413	1343	0.56	C	0.17	No
Couser Cyn to Pala Mission Rd	2**	434	EB	1900	0.23	A	414	848	0.45	B	0.22	No	950	WB	1900	0.50	B	301	1251	0.66	C	0.16	No

Source: SANDAG Year 2030 Cumulative Map. Notes: Dir = Direction. Vol = Volume. Cap = Capacity. v/c = volume to capacity ratio. LOS = Level of Service. E: Existing. C: Cumulative. P: Project. *Mitigation of 2 lanes consistent with current circulation element (capacity from SANDAG coverage). **Mit consistent with current circulation element, capacity of 2 lanes based on doubling existing capacity of 950.
*** Cumulative impact mitigated when analyzed under current circulation element classification of Expressway (6 lane divided roadway).

TABLE 44: CUMULATIVE IMPACT STATE ROUTE SEGMENT OPERATIONS WITH CIRCULATION ELEMENT MITIGATION

State Route	Classification	Existing + Cumulative + Project				
		Daily Volume	LOS E Capacity	V/C	LOS	Cumulative Impact?
SR76 (from Melrose Dr to E Vista Way)	Expressway (6D)	60,245	108,000	0.56	C	No
SR76 (from E Vista Way to North River Rd)	Expressway (6D)	47,108	108,000	0.44	B	No
SR76 (from North River Rd to Olive Hill Rd)	Expressway (6D)	59,327	108,000	0.55	C	No
SR76 (from Olive Hill Rd to S Mission Rd)	Expressway (6D)	60,858	108,000	0.56	C	No

LOS: Level of Service. V/C: Volume to Capacity ratio. Daily volumes is a 24 hour volume. 6D: 6 lane divided roadway

To mitigate the cumulative impacts, the project applicant proposes to pay into the Transportation Impact Fee (TIF) program.

The County of San Diego has developed an overall programmatic solution that addresses existing and projected future road deficiencies in the unincorporated portion of San Diego County. This program includes the adoption of a TIF program to fund improvements to roadways necessary to mitigate potential cumulative impacts caused by traffic from future development. Based on SANDAG regional growth and land use forecasts, the SANDAG Regional Transportation Model was utilized to analyze projected build-out (year 2030) development conditions on the existing circulation element roadway network throughout the unincorporated area of the County. Based on the results of the traffic modeling, funding necessary to construct transportation facilities that will mitigate cumulative impacts from new development was identified. Existing roadway deficiencies will be corrected through improvement projects funded by other public funding sources, such as TransNet, gas tax, and grants. Potential cumulative impacts to the region's freeways have been addressed in SANDAG's Regional Transportation Plan (RTP). This plan, which considers freeway buildout over the next 30 years, will use funds from TransNET, state, and federal funding to improve freeways to projected level of service objectives in the RTP.

The proposed project generates 19,941 ADT. These trips will be distributed on circulation element roadways in the County that were analyzed by the TIF program, some of which currently or are projected to operate at inadequate levels of service. These project trips, therefore, contribute to a potential significant cumulative impact and mitigation is required. The potential growth represented by this project was included in the growth projections upon which the TIF project is based. Therefore, payment of the TIF, which will be required at issuance of building permits, in

combination with other components of the program described above, will mitigate potential cumulative impacts to less than significant. The applicant will request TIF credit for all allowable associated costs of roadway improvements that the project will construct to roadways listed in the January 2008 TIF update. TIF excerpts from the County of San Diego January 2008 TIF Program Update are included in **Appendix X**.

5.3 Horizon Year Impacts

The horizon year cumulative segment impact is calculated to operate at acceptable levels of service with a mitigation measure recommended within the TIF program as shown in **Table 45.**

TABLE 45: HORIZON YEAR (2030) + PROJECT SEGMENT VOLUMES AND LEVEL OF SERVICE WITH RECOMMENDED MITIGATION

Segment of Pankey Road	Sept 2005 Circulation Element	Horizon Year (2030) Daily Volume	Horizon Year (2030) LOS E Capacity	Horizon Year (2030) V/C	Horizon Year (2030) LOS	Project Daily Volumes	Horizon Year (2030) + Project Daily Volume	Horizon Year (2030) + Project LOS E Capacity	Horizon Year (2030) + Project V/C	Horizon Year (2030) + Project LOS	Change in V/C	Cumulative Impact?
Pankey Rd from SR-76 to Shearer Crossing	Light Collector	16,411	16,200	1.01	F	3,589	20,000	16,200	1.23	F	0.22	Yes
With mitigation of TIF recommended classification of Collector												
Pankey Rd from SR-76 to Shearer Crossing	Collector	16,411	34,200	0.48	B	3,589	20,000	34,200	0.58	B	0.10	No

LOS: Level of Service. V/C: Volume to Capacity ratio. Daily volumes is a 24 hour volume.

5.4 Project Features

As part of the project, the applicant proposes to construct the following improvements:

1) Intersection of SR-76 at Horse Ranch Creek Road.

2) Six internal intersections (reference numbers 23, 24, 25, 26, 28, and 29).

3) Roadway segment of Horse Ranch Creek Road from SR-76 to the southern terminus of Pankey Road south of Stewart Canyon Road.

4) Roadway segment of Street R from Pala Mesa Drive to Horse Ranch Creek Road.

5) Roadway segment of Pala Mesa Drive from Old Highway 395 to Street R.

6) Roadway segment of Pala Mesa Drive from Street R to SR-76.

Signal warrants for the proposed on-site intersections are included in **Appendix Y**.

5.5 Other Project Improvements

SR-76 is currently being widened from 2 to 4 lanes from the I-15 NB Ramp easterly a distance of approximately 1.4 miles. Since this widening is in the construction stage, the capacity of the completed improvement was incorporated in the analysis. Improvements by others (i.e. Caltrans, Palomar College, Pauma Tribe, or Pala Tribe) were not incorporated into the analysis for additional roadway capacity.

5.6 Direct Mitigation, Cumulative Mitigation, and Project Feature Summary

The proposed mitigation for the direct and cumulative impacts, responsible party for the mitigation, significance after mitigation, project features, and other improvements currently being constructed are summarized below in multiple tables. Direct intersection impacts are shown in **Table 46** while the state route direct impacts are summarized in **Table 47**. Project features are outlined in **Table 48**. **Table 49** shows the cumulative intersection impacts and cumulative segment and state route impacts are shown in **Table 50**. **Table 51** shows improvements by others. Proposed mitigation measures and improvements are shown graphically in **Figure 28** (additional details for the off-site improvements LOS calculations for the phasing are included in **Appendix Z**).

TABLE 46: SUMMARY OF DIRECT INTERSECTION IMPACTS

Direct Intersection Impacts	Mitigation	Responsible Party	Significance After Mitigation
1) SR-76 at I-15 NB Ramp (#7)	Construct loop on-ramp for EB SR-76 to NB I-15	Applicant	Direct impact mitigated to below a level of significance
2) Old Highway 395 at Reche Rd (#15)	Install traffic signal	Applicant	Direct impact mitigated to below a level of significance

TABLE 47: SUMMARY OF DIRECT STATE ROUTE IMPACTS

Direct State Route Impacts	Mitigation	Responsible Party	Significance After Mitigation
1) SR-76 (I-15 SB Ramp to I-15 NB Ramp)	Construct loop on-ramps at the intersection of SR-76/I-15 NB & SB Ramps and re-stripe bridge to 4 lanes	Applicant	Direct impact mitigated to below a level of significance.
2) SR-76 (from S Mission Rd to Gird Road)	Widen SR-76 from 2 to 4 lanes	TransNet SR-76 Widening	Direct impact mitigated to below a level of significance with TransNet improvements. Due to timing considerations, applicant will require overriding considerations if Campus Park proceeds before TransNet improvements
3) SR-76 (Sage Rd to Old Hwy 395)	Widen SR-76 from 2 to 4 lanes	TransNet SR-76 Widening	Direct impact mitigated to below a level of significance with TransNet improvements. Due to timing considerations, applicant will require overriding considerations if Campus Park proceeds before TransNet improvements
4) SR-76 (Horse Ranch Creek Road to Couser Canyon Road)	Widen SR-76 from 2 to 4 lanes	Caltrans	Direct impact mitigated to below a level of significance with future Caltrans improvements. Due to timing considerations, applicant will require overriding considerations if Campus Park proceeds before Caltrans improvements

TABLE 48: SUMMARY OF PROJECT FEATURES BY APPLICANT

Project Features	Improvement	Responsible Party	Significance After Mitigation
1) INTERSECTION: SR-76 at Horse Ranch Creek Road (#9)	Construct traffic signal	Applicant	On-Site LOS C or better with proposed project feature

Project Features	Improvement	Responsible Party	Significance After Mitigation
2) INTERSECTIONS: Six internal intersections (#23, 24, 25, 26, 27, 28 and 29) along Horse Ranch Creek Road and Street R	Construct intersections and install traffic signal when signal warrants are satisfied (1)	Applicant	On-Site LOS C or better with proposed project feature
3) SEGMENT: Horse Ranch Creek Road from SR-76 to southern terminus of Pankey Road south of Stewart Canyon Road	Construct 4 lane roadway per General Plan Update Boulevard Standards	Applicant	On-Site LOS C or better with proposed project feature
4) SEGMENT: Street R from Pala Mesa Drive to Horse Ranch Creek Road	Construct 2 lane roadway	Applicant	On-Site LOS C or better with proposed project feature
5) SEGMENT: Pala Mesa Drive from Old Highway 395 to Street R	Construct 2 lane roadway	Applicant	On-Site LOS C or better with proposed project feature
6) SEGMENT: Pala Mesa Drive from Street R to SR-76	Construct 4 lane roadway	Applicant	On-Site LOS C or better with proposed project feature
7) INTERSECTION: SR-76 at Via Monserate (#1)	Signalize Intersection and add SB left turn lane and WB right turn lane	Applicant	Project resulted in less than significant impact
8) SR-76 at Gird Road (#2)	Additional WB lane	Applicant	Project resulted in less than significant impact
9) SR-76 at Sage Road (#3)	Signalize Intersection and add EB left turn lane	Applicant	Project resulted in less than significant impact
10)SR-76 at Old Hwy 395 (#4)	Additional NB and SB left turn lane	Applicant	Project resulted in less than significant impact
11)SR-76 at I-15 SB Ramp (#6)	Construct WB to SB loop ramp to I-15, restripe EB and WB travel to two lanes	Applicant	Project resulted in less than significant impact
12)SR-76 at I-15 NB Ramp (#7)	Construct EB to NB loop ramp to I-15, restripe EB and WB travel to two lanes	Applicant	Project resulted in less than significant impact
13)SR-76 at Pankey Road (#8)	Install traffic signal and add NB & SB left turn lanes	Applicant	Project resulted in less than significant impact
14)SR-76 at Horse Ranch Creek Road (#9)	Install traffic signal with SB left, combination left-through-right, and right turn lane, NB combination left-through-right lane	Applicant	Project resulted in less than significant impact
15)SR-76 at Pala Mesa Road (#12)	Install traffic signal and add NB & SB through lanes, EB & WB left turn lanes	Applicant	Project resulted in less than significant impact
16)SR-76 at Pala Mesa Road (#14)	Install traffic signal and add EB & WB left turn lanes	Applicant	Project resulted in less than significant impact
17)Old Highway 395 at E Mission Road (#19)	Additional SB left turn lane and WB right turn lane	Applicant	Project resulted in less than significant impact
18)Mission Road at I-15 SB Ramp (#20)	Additional SB & EB right turn lane	Applicant	Project resulted in less than significant impact

Notes: (1) If Campus Park is the only project to be constructed, then the aforementioned intersections are calculated to operate at acceptable LOS with stop control. When the other projects are constructed, then the traffic signals can be constructed per the MUTCD signal warrants calculations included in the Appendix.

TABLE 49: SUMMARY OF CUMULATIVE INTERSECTION IMPACTS

Cumulative Intersection Impacts	Mitigation	Responsible Party	Significance After Mitigation
1) SR-76 at Melrose Dr (#30)	Additional EB & WB left turn lane and through lane	TIF TransNet SR-76 Widening	Cumulative impact mitigated to below a level of significance
2) SR-76 at E. Vista Way (#31)	Additional EB through and right turn lane, additional two WB through lanes, and additional NB and SB lanes	TIF TransNet SR-76 Widening	Cumulative impact mitigated to below a level of significance
3) SR-76 at North River Road (#32)	Additional EB and WB through lanes and separate WB right turn lane	TIF TransNet SR-76 Widening	Cumulative impact mitigated to below a level of significance
4) SR-76 at Olive Hill Road (#33)	Additional EB through and separate right turn lane, additional WB left lane and through lane, additional NB through lane, additional SB left turn lane and right turn lane	TIF TransNet SR-76 Widening	Cumulative impact mitigated to below a level of significance
5) SR-76 at S. Mission Road (#34)	Two additional EB through lanes	TIF TransNet SR-76 Widening	Cumulative impact mitigated to below a level of significance
6) SR-76 at Via Monserate (#1)	Additional EB & WB lanes with either a traffic signal or restriction to SB left turns	TIF TransNet SR-76 Widening	Cumulative impact mitigated to below a level of significance
7) SR-76 at Gird Road (#2)	Additional EB & WB lanes	TIF TransNet SR-76 Widening	Cumulative impact mitigated to below a level of significance
8) SR-76 at Sage Road (#3)	Additional EB & WB lanes with either a traffic signal or restriction to SB left turns	TIF TransNet SR-76 Widening	Cumulative impact mitigated to below a level of significance
9) SR-76 at Old Hwy 395 (#4)	Additional EB right turn lane, additional NB left turn lane and through lane, additional dual SB left turn lanes	TIF TransNet SR-76 Widening	Cumulative impact mitigated to below a level of significance
10) SR-76 at I-15 SB Ramp (#6)	Additional EB and WB through lanes and interchange modifications of either loop ramps or additional turn lanes	TIF TransNet SR-76 Widening	Cumulative impact mitigated to below a level of significance
11) SR-76 at I-15 NB Ramp (#7)	Additional EB and WB through lanes and interchange modifications of either loop ramps or additional turn lanes	TIF TransNet SR-76 Widening	Cumulative impact mitigated to below a level of significance
12) SR-76 at Pankey Road (#8)	Install traffic signal and add EB & WB left turn lanes, additional NB dual left turn lanes and through lane, additional SB left turn lane and through lane	TIF	Cumulative impact mitigated to below a level of significance
13) SR-76 at Rice Canyon Road (#10)	Install traffic signal and add EB left turn lane and WB right turn lane	TIF	Cumulative impact mitigated to below a level of significance
14) SR-76 at Couser Canyon Road (#11)	Install traffic signal and add EB right turn lane and WB left turn lane	TIF	Cumulative impact mitigated to below a level of significance
15) Old Highway 395 at E Mission Road (#19)	Additional SB left turn lane	TIF	Cumulative impact mitigated to below a level of significance
16) Mission Road at I-15 SB Ramp (#20)	Additional EB through and EB right turn lane	TIF	Cumulative impact mitigated to below a level of significance
17) Mission Road at I-15 NB Ramp (#21)	Additional EB left turn lane	TIF	Cumulative impact mitigated to below a level of significance
18) Old Highway 395 at Reche Road (#15)	Install traffic signal and separate EB left turn lane, additional NB and SB through lanes, separate SB right turn lane	TIF	Cumulative impact mitigated to below a level of significance

Cumulative Intersection Impacts	Mitigation	Responsible Party	Significance After Mitigation
19) Old Highway 395 at Stewart Canyon Road (#14)	Install traffic signal and add additional NB and SB through lanes, additional EB and WB left turn lane	TIF	Cumulative impact mitigated to below a level of significance
20) Old Highway 395 at Pala Mesa Drive (#12)	Install traffic signal and add additional NB and SB through lanes, additional EB and WB left turn lanes	TIF	Cumulative impact mitigated to below a level of significance
21) Old Hwy 395 at Dulin Rd (#5)	Install traffic signal	TIF	Cumulative impact mitigated to below a level of significance
22) Reche Rd at Live Oak Park Rd (#35)	Install traffic signal	TIF	Cumulative impact mitigated to below a level of significance

TABLE 50: SUMMARY OF CUMULATIVE SEGMENT AND STATE ROUTE IMPACTS

Cumulative Segment and State Route Impacts	Mitigation	Responsible Party	Significance After Mitigation
1) SEGMENT: Old Highway 395 (E Mission Rd to W. Lilac)	Widen Roadway to 4 lane Collector	TIF	Cumulative impact mitigated to below a level of significance
2) SEGMENT: Reche Rd (Green Canyon Norte to Live Oak Park Rd)	Widen Roadway to 4 lane Collector	TIF	Cumulative impact mitigated to below a level of significance
3) SEGMENT: Reche Rd (Live Oak Park Rd to Gird Rd)	Widen Roadway to Town Collector	TIF	Cumulative impact mitigated to below a level of significance
4) SEGMENT: Pankey Rd (SR-76 to Shearer Crossing)	Widen Roadway to 4 Lane Collector	TIF	Cumulative impact mitigated to below a level of significance
5) SEGMENT: Pala Mesa Dr (Wilt Rd/Sage Rd to Old Hwy 395)	Widen Roadway to Town Collector	TIF	Cumulative impact mitigated to below a level of significance
6) STATE ROUTE: 76 (Melrose Dr to S Mission Rd)	Widen SR-76 from 2 to 6 lanes	TransNet SR-76 Widening TIF	Cumulative impact mitigated to below a level of significance
7) STATE ROUTE: 76 (S Mission Road to Old Hwy 395)	Widen SR-76 from 2 to 4 lanes	TransNet SR-76 Widening TIF	Direct impact mitigated to below a level of significance
8) STATE ROUTE: 76 (I-15 SB Ramp to I-15 NB Ramp)	Restripe SR-76 from 2 to 4 lanes	TransNet SR-76 Widening TIF	Cumulative impact mitigated to below a level of significance
9) STATE ROUTE: 76 (Horse Ranch Creek Road to Pala Mission Road)	Widen SR-76 from 2 to 4 lanes	Caltrans or TIF	Cumulative impact mitigated to below a level of significance

TABLE 51: SUMMARY OF IMPROVEMENTS BY OTHERS

Project Features	Improvement	Responsible Party	Significance After Mitigation
1) STATE ROUTE: 76 from I-15 NB Ramp easterly a distance of approximately 1.4 miles	Widen from 2 to 4 lanes	Under Construction by Granite Construction Company	Acceptable LOS with this improvement through Horizon Year (2030)

Figure 28a: Recommended Mitigation Measures and Improvements

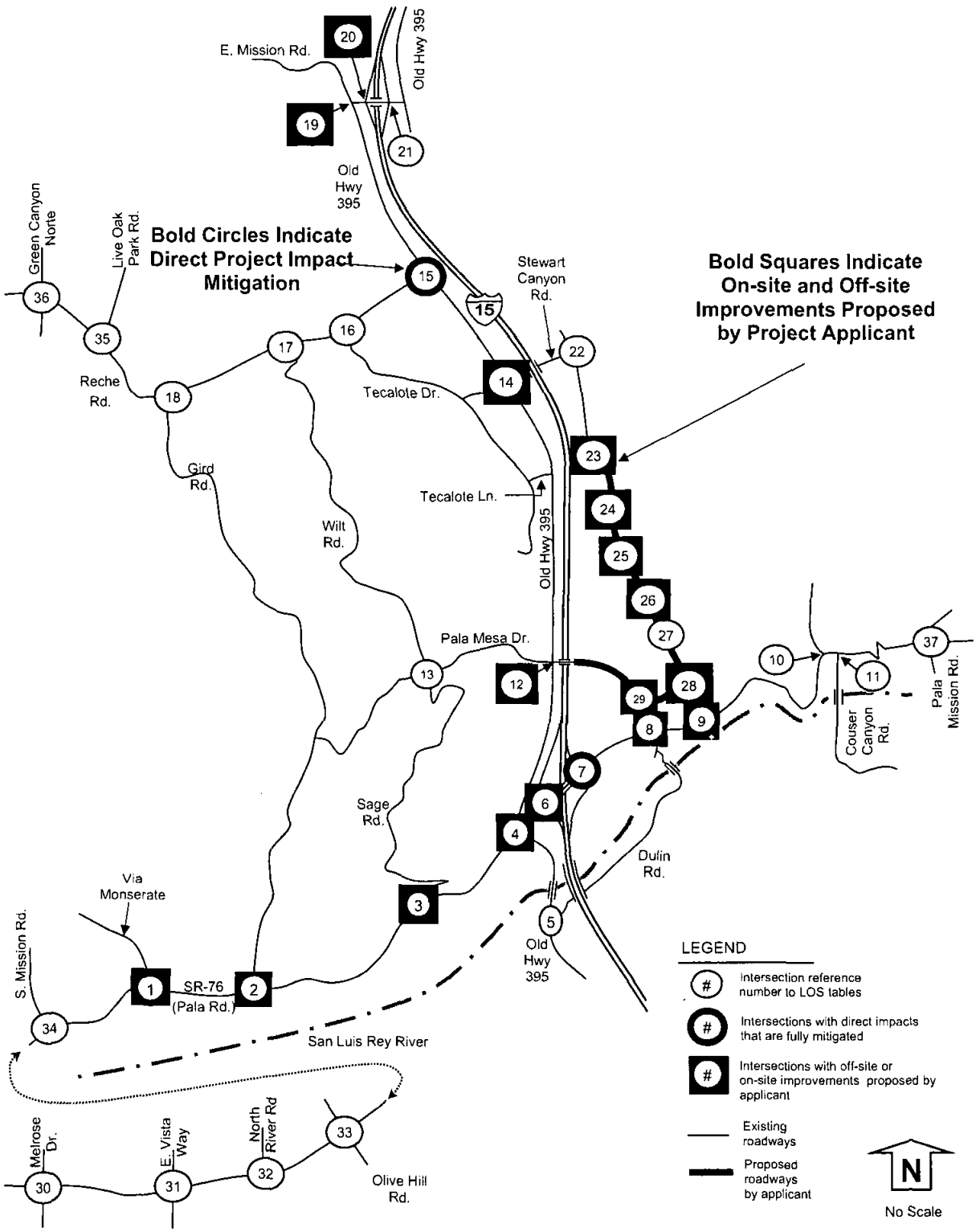


Figure 28b: Recommended Mitigation Measures and Improvements

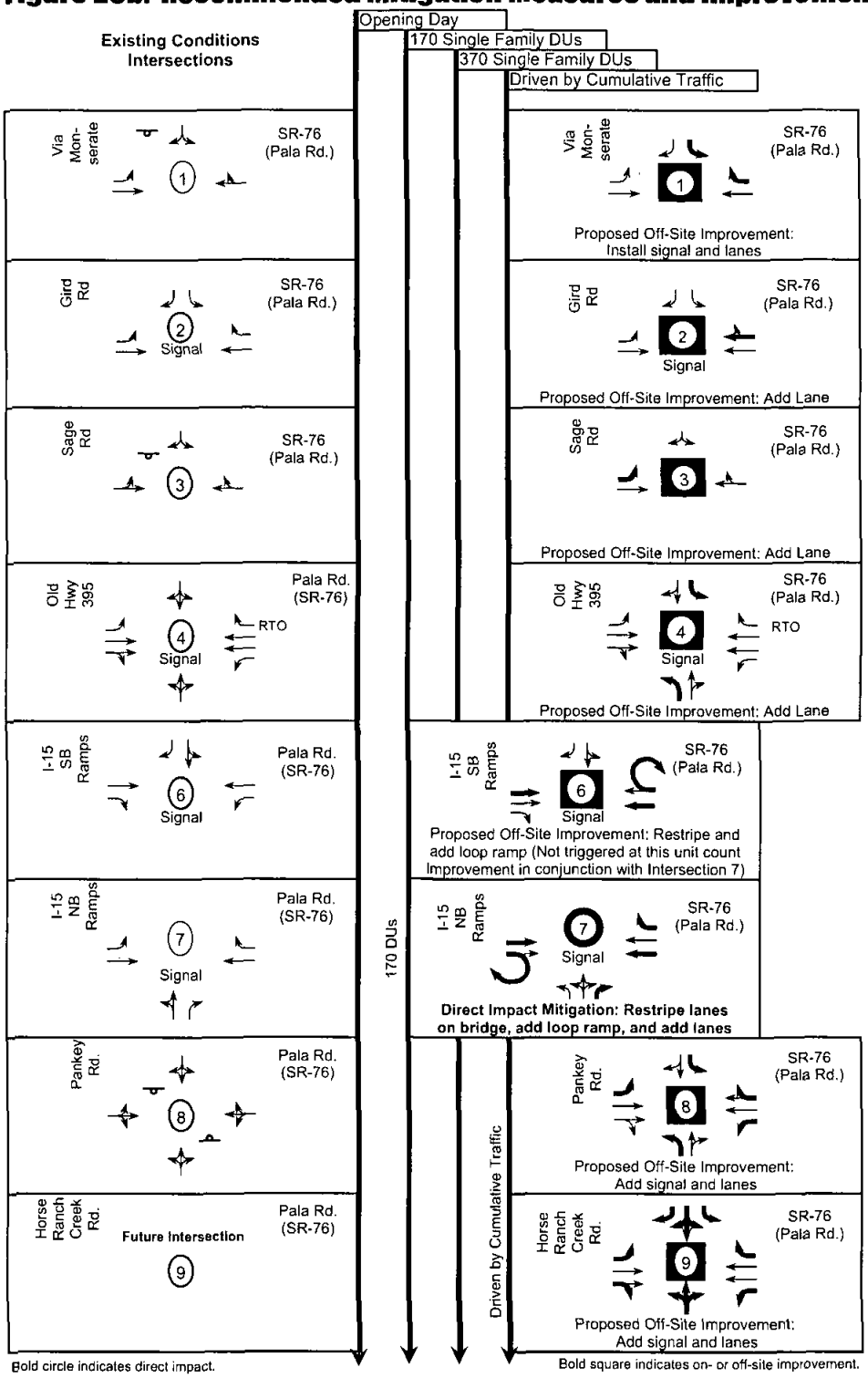


Figure 28c: Recommended Mitigation Measures and Improvements

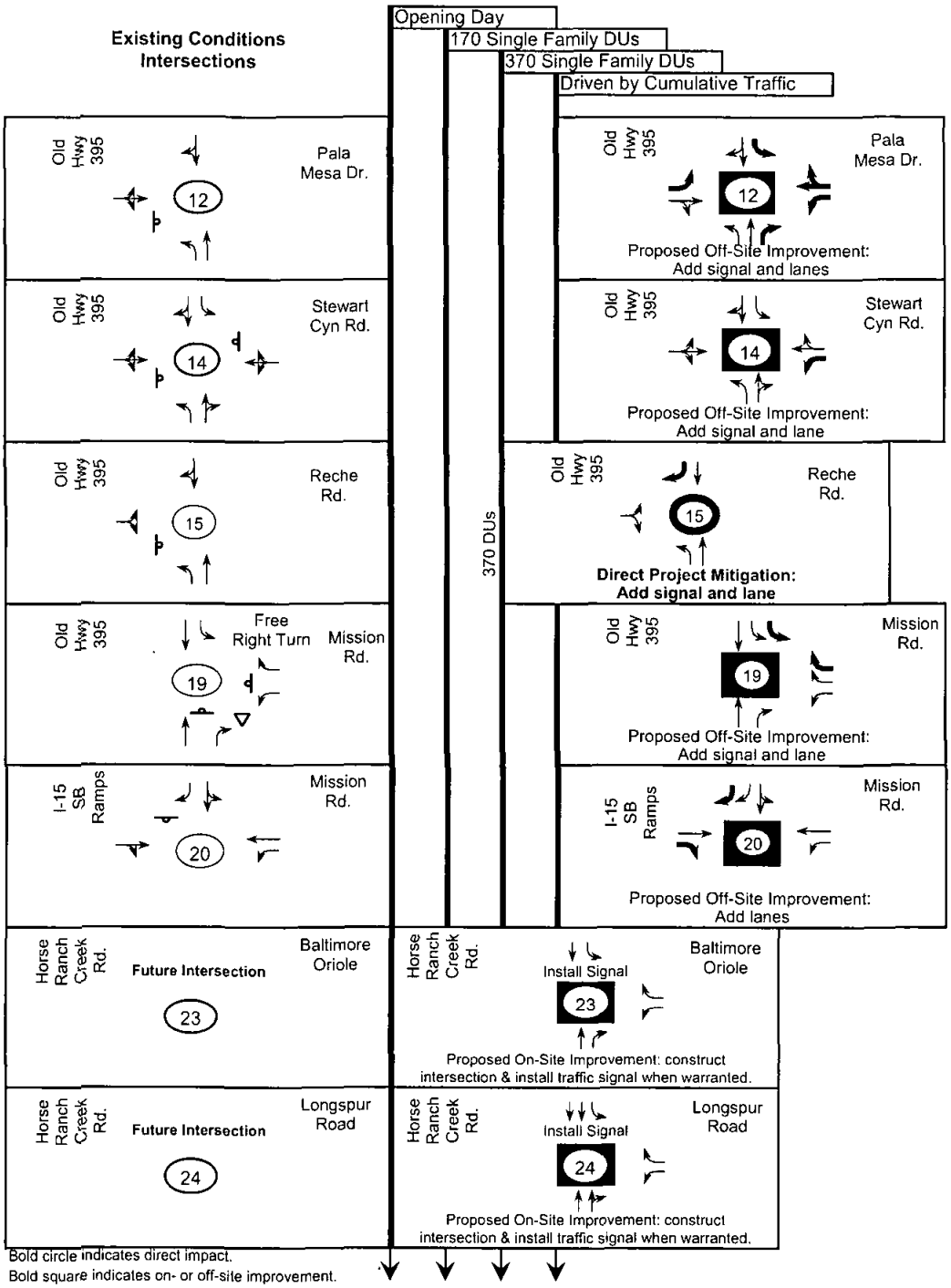
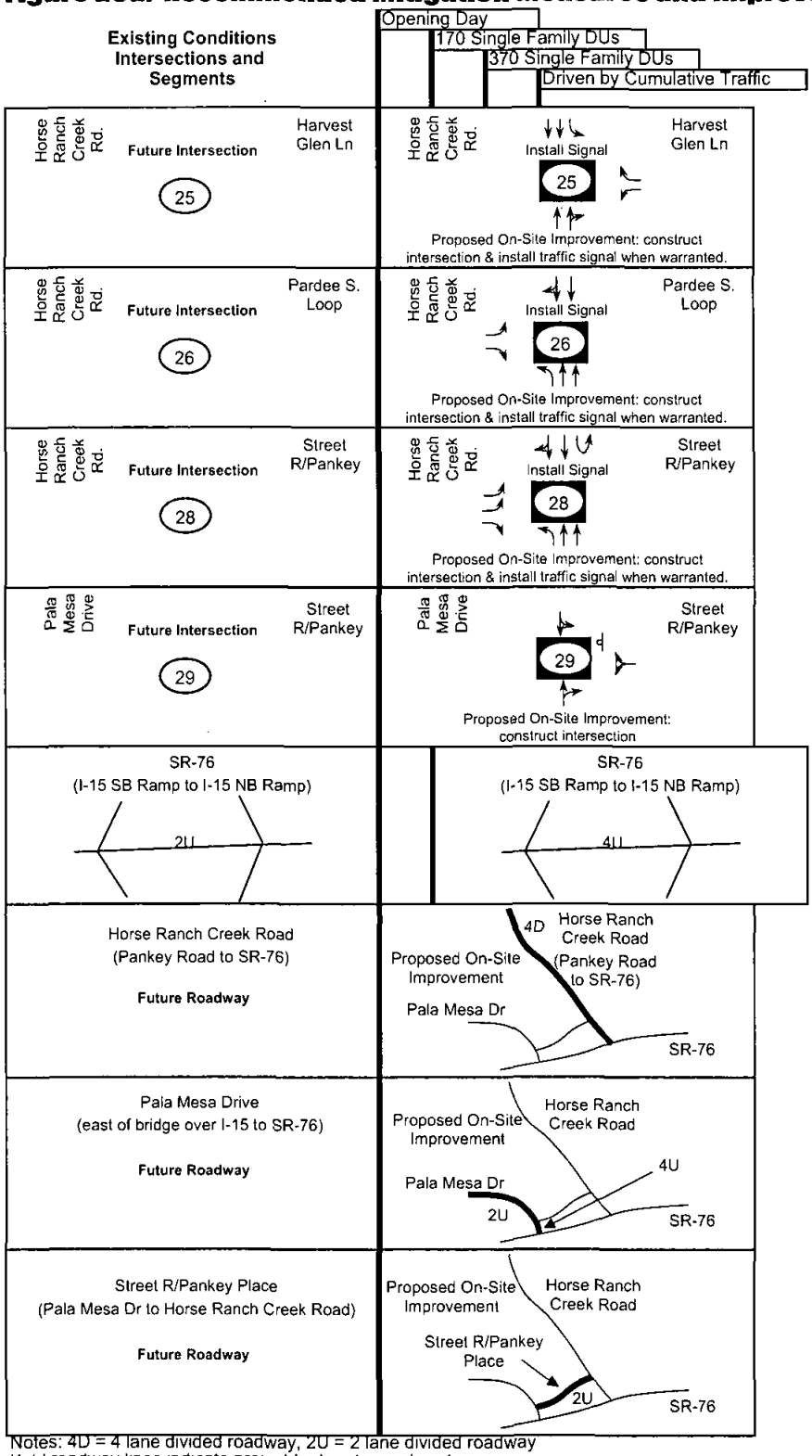


Figure 28d: Recommended Mitigation Measures and Improvements



Notes: 4D = 4 lane divided roadway, 2U = 2 lane divided roadway
Bold roadway lines indicate project feature by applicant

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